

'92 CATALOG

TOKO
TECHNO

 MEETING YOUR NEEDS
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Specifications of products in this catalog are subject to change without notice. It is requested that confirmation is made when ordering.

本カタログは、製品の改善などによって、記載内容を予告なく変更することがありますのでご了承下さい。

なお、ご注文に際しては、仕様・承認図などの取り交わしをお願いします。

◎：本製品はココム製品です。輸出に関しては、通商産業省の事前の許可が必要です。詳細はお問い合わせください。

Uses of Toko's Products 東光商品 用途別一覧

		Coils & filters	Giga-Hz range filters	Ceramic filters	Oscillating elements	Variable capacitance diodes	ICs for communications equipment	General purpose ICs	HF hybrid modules	Pulse transformers	Delay lines	Switches	DC/DC converters	Switching power supplies	Video frame memories	NC boards
Television Equipment																
High-definition TV		●														
Small TV sets		●										●				
BS tuners		●	●		●							●				
VCR/VTR		●			●	●		●			●					
Video movies		●			●			●			●	●				
Video disk players		●			●	●		●			●					
Electronic still cameras		●			●			●			●					
Audio Equipment																
Radio sets		●		●		●		●								
Car audio systems		●		●		●		●			●	●				
Tape recorders		●														
CD players		●			●	●				●	●					
Stereo components		●		●		●		●				●				
Head-phone stereos		●				●		●								
Household Equipment		●			●							●				
Radio Communicators																
Cordless phones		●	●		●	●	●	●	●	●	●	●				
Pagers		●	●		●	●	●	●	●	●	●					
Car radiophones		●	●		●		●	●	●	●	●	●				
Wire Communicators																
Telephones		●			●				●			●				
FAX		●			●				●		●	●				
LAN					●				●							
Measuring Instruments					●	●		●			●	●	●			
Computers																
Lap-top PC						●				●			●	●		
HDD/OMDD						●	●	●		●	●	●	●			
Laser beam printers										●	●	●				
Ultrasonic medical equipment						●				●	●	●				
Image processors		●								●	●	●	●	●	●	
Industrial machines					●			●	●		●		●			●
Office equipment					●			●						●		

Products for Surface Mounting Technology 東光の面実装対応品一覧

Item	Type Name	Use	Description	Dimensions, mm W × D × H	Soldering Process	Packaging	Page									
Coils	43CS	General purpose	Fixed	4.5 × 3.2 × 3.5	Dip or reflow	Tape or tray	7									
	43FS			4.5 × 3.2 × 3.5												
	5CA			6.6 × 5.8 × 4.0												
	10RF			10 × 11 × 5.5												
	12RF			12 × 13 × 6.5												
	B5F	DMB. splitter		6.9 × 6.9 × 5			9									
	5CBL	Card type radio & Comm. equip.	Adjustable	4.6 × 4.2 × 2.1	Reflow	Tape or tray	7									
	5CDL			5.3 × 5.3 × 2.2												
	5CBG			5.2 × 5.2 × 4.6												
	5CCL			6.0 × 5.7 × 5.0												
	5CCD			6.0 × 5.7 × 5.5												
LC Filters	5CCA			6.0 × 5.7 × 6.0												
	5CE			6.3 × 6.1 × 5.6												
	MC152			5.1 × 5.1 × 5.5												
	MC153			11.4 × 5.0 × 5.0												
	4FUS	Video	Fixed	5.2 × 5.2 × 5.1	Reflow	Tape or tray	6									
	4FS			5.2 × 5.2 × 5.1												
	4FW			10 × 5.2 × 5.1												
	4FT			14.9 × 5.2 × 5.1												
	4FNS			5.5 × 5.5 × 5.1												
Helical Filters	4FNW	Fixed or adjustable	Fixed or adjustable	11.3 × 5.5 × 5.1	Reflow	Tape or tray	10									
	4FNT			16.9 × 5.5 × 5.1												
	4FJS			5.2 × 5.2 × 3.9												
	4FJW			10 × 5.2 × 3.9												
	4FJT			14.9 × 5.2 × 3.9												
	5FS	Audio	Adjustable	5.6 × 5.6 × 8.0												
	5CHLW	Comm. equip.	Adjustable & Fixed	11.0 × 6.0 × 4.5												
	5CHW			11.5 × 6.0 × 6.3												
	5CHT			17.3 × 6.0 × 6.3												
Diodes (Var. cap.)	KV1562M	AM audio	AM: 8V, 4 sect, miniflat	MFP-8	Reflow	Tape	21									
	KV1563M			AM: 8V, 3 sect, miniflat												
	KV1530			AM: 8V, VFO control												
	KV1550	AM audio	AM: 4.5V, 2 sect., 1 chip	SOT-23												
	KV1560			AM: 8V, 2 sect., 1 chip												
	KV1580			AM: 6.5V, 2 sect.												
	KV1581			AM: 6.5V, single												
	KV1410	FM, comm. equip	FM: 8V, minimold, twin	SOT-23L												
	KV1420			FM: 25V, minimold, twin												
	KV1430			FM: 9V, minimold, twin												
	KV1440			FM: 8V, minimold, twin												
	KV1450			FM: 9V, wideband, minimold												
ICs	KV1470			FM: 5V, wideband, minimold												
	KV1812	VCO	UHF: 8V single	SOT-23												
	KV1821			UHF: 25V single												
	KV1832			UHF: 4V single												
	TK11821M	Audio, comm. equip.	DC-DC converter	MFP-8	Reflow	Tape	31									
	TK11806M	AV, comm. equip.	Motor control													
	TK10502M	Video, comm. equip.														
	TK10503M															
	TK10681M	Local regulator, L level														
	TK10682M	Local regulator, H level														
	TK11701M	Programmable regulator														
	TK114□□M	AV, comm. equip.	Local regulator	SOT-23L	Reflow	Tape	29									
	TK115□□M			MFP-8												
	TK10446M		1V regulator													
	TK10420M	Comm. equip.	Narrow band FM receiving system	MFP-20												
	TK10421M															
	TK10485M		High sensitivity narrow band receiving system													
	TK10486M															
	TK10487M															

continued on next page

Item	Type Name	Use	Description	Dimensions, mm W × D × H	Soldering Process	Packaging	Page	
ICs	TK10440M	Comm. equip.	FM-IF System IC's for Pager	MFP-20	Reflow	Tape	24	
	TK10440V			VSOP-20			25	
	TK10445M			MFP-20			26	
	TK10445V			VSOP-20			25	
	TK10447M			MFP-20			26	
	TK10447V			VSOP-20			26	
	TK10650M		Compador	MFP-20		Tray	33	
	TK10651M			MFP-28			34	
	TK10652M			VSOP-24			35	
	TK10654M			MFP-20			35	
	TK10655M			QFP-52			35	
	TK10752Q		FM-IF + Compador	2 cct audio muting use	Reflow	Tape	33	
	TK15120M	AV, comm. equip.		Analog switch			34	
	TK15067M	Video, comm. equip.	AV	TV multiplex sound	MFP-20	Tray	35	
	TK10840M	Graphic equalizer		35				
	TK10850M	MFP-28		35				
	TK10581M	Audio		MFP-30			35	
	TK10585M			QFP-60			35	
	TK10590M						35	
	KM3702AQ	FA	LSI for Numerical control					
Delay Lines	RMT020L	OA/FA	Built-in TTL 5 outputs	13.0 × 13.0 × 4.9	Reflow	Cartridge (Stick)	51	
	RMT025L						51	
	RMT050L						51	
	RMT075L						51	
	RMT100L						51	
	RMT150L						51	
	RMT200L		Low-profile design	12.2 × 7.3 × 4	Reflow	Tape or Cartridge	52	
	RST020A						52	
	RST030A						52	
	RST040A						52	
	RST050A						52	
	RST020C						52	
Pulse Trans- formers	RST030C	LAN	Four windings are available for use	12 × 9.6 × 6.0	Reflow	Cartridge	52	
	RST040C						52	
	RST050C						52	
	Q20RTS8-1EQ						52	
Switch	Q20RTS8-2EQ	General purpose	Gull. J Wing type 160.300gf	6.2 × 6.2 × 2.7	Dip or Reflow	Tape	37	
	Q20RTS15-1EQ						37	
	Q20RTS15-2EQ						37	
	KSC						37	

Small Coil Applications 小形コイル 用途別一覧

PRECAUTIONS FOR USE

1. Products, when stored, should be kept in an environment free from high temperature, high humidity, dust and corrosive gases.
2. Rough handling of products must be avoided.
3. Direct handling of terminals (pins) must be avoided to prevent solder defects.
4. Do not bend the terminals.
5. Coils may be damaged when rinsing fluids are used for flux removal and should not be applied.
When cleaning is necessary, please consult your sales rep.
6. Care should be taken in design and in production that the adjustable core does not become fixed due to solder flux.
7. In the set design, care must be taken with regard to spurious signal generation, especially when using ceramic filters.

ご使用上の注意

1. 製品の保管の際には、高温・多湿・塵埃・有毒ガスのないようにして下さい。
2. 製品の落下や乱雑な取り扱いは、破損またはトルク変化を生ずる恐れがありますのでご注意下さい。
3. はんだ付け性の劣化原因となりますので、電極(はんだ付け端子)に直接手で触れないで下さい。
4. 端子は折り曲げないで下さい。
5. コイルが、フラックスなどの洗浄液により著しく損なわれる場合がありますので洗浄しないで下さい。特に洗浄が必要な場合は、ご相談下さい。
6. 調整磁石が、はんだ付けフラックスにより固定されないように、設計や生産時にご配慮下さい。
7. セットの設計の際に、スプリアス特性にご注意下さい。
(特にカミックフィルタの場合)

Coils for Radio, TV & Stereo Sets 可変コイル

Specifications		Freq. Range		L Range		Q (Typ.) Q		Int. cap. on option;		Specifications		Freq. Range		L Range		Q (Typ.) Q		Int. cap. on option;	
Type		kHz 10	kHz 100	MHz 1	MHz 100					Type		kHz 10	kHz 100	MHz 1	MHz 100				
5S  (5.4 x 5.8 x 6.2mm) Max.						1 μ H 680 μ H	70 ~ 100	180pF 1500pF 18~56pF (E-12 Series)		7PB  (7.5 x 7.5 x 6.7mm) Max.					1 μ H ~ 700 μ H	80	12~ 330pF (E-12 Series)		
5SU  (5.9 x 5.9 x 6.2mm) Max.						100 μ H ~ 680 μ H	30	1500pF		7KM  (7.5 x 7.5 x 13mm) Max.					0.03 μ H ~ 80 μ H	80	5~ 100pF (E-12 Series)		
5KM  (5.9 x 5.9 x 7.5mm) Max.						0.03 μ H ~ 5 μ H	40 ~ 70	18 ~ 47pF (E-12 Series)		7KL  (7.5 x 7.5 x 9.5mm) Max.					0.03 μ H ~ 50 μ H	80	5~ 100pF (E-12 Series)		
5K  (5.9 x 5.9 x 6.2mm) Max.						0.08 μ H ~ 1 μ H	70	None		7KB *  (7.5 x 7.5 x 12mm) Max.					0.1 μ H ~ 10 μ H	80	None		
5KP  (5.9 x 5.9 x 7.3mm) Max.						0.03 μ H ~ 0.5 μ H	40 ~ 60	18 ~ 47pF (E-12 Series)		7KLS  (7.5 x 7.5 x 6.8mm) Max.					0.03 μ H ~ 10 μ H	20	5~ 100pF (E-12 Series)		
5A  (5.8 x 5.8 x 9.3mm) Max.						0.03 μ H ~ 0.3 μ H	50 ~ 70	None		7KS  (7.5 x 7.5 x 6.9mm) Max.					0.05 μ H ~ 10mH	100	None		
7P  (7.5 x 7.5 x 12mm) Max.						1 μ H ~ 1.1mH	70 ~ 110	430pF 180pF 5~100pF (E-12 Series)		7PA  (7.5 x 7.5 x 13.5mm) Max.					1mH ~ 20mH	50	10~ 6800pF		
7PU  (7.5 x 7.5 x 12mm) Max.						100 μ H ~ 800 μ H	30	430pF 180pF (E-12 Series)		7PLA  (7.5 x 7.5 x 9.5mm) Max.					1mH ~ 15mH	50	10~ 6800pF (E-12 Series)		
7PL  (7.5 x 7.5 x 9.2mm) Max.						1 μ H ~ 500 μ H	60 ~ 100	430pF 5~100pF (E-12 Series)		7TL  (7.5 x 7.5 x 9.2mm) Max.					500 μ H ~ 10 μ H	50	None		
7PS  (7.3 x 7.3 x 6.9mm) Max.						1 μ H ~ 700 μ H	80	10~ 100pF (E-12 Series)		7TS  (7.5 x 7.5 x 6.4mm) Max.					200 μ H ~ 7mH	50	None		
7PSU  (7.8 x 7.8 x 6.9mm) Max.						1 μ H ~ 300 μ H	30	430pF		10EZ  (10.5 x 10.5 x 13.5mm) Max.					2 μ H ~ 2mH	70 ~ 140	430pF 180pF 5~100pF (E-12 Series)		

* Adjustable from bottom (下側から調整可能な仕様あり)

Type	Specifications		L Range	Q (Typ.) Q	Int. cap. on option;	Type	Specifications		L Range	Q (Typ.) Q	Int. cap. on option;
	kHz 10	kHz 100					MHz 1	MHz 10			

10K  (10.5 x 10.5 x 13mm) Max.				0.08 μ H ~ 50 μ H	80 ~ 100	5 ~ 100pF (E-12 Series)					
10PA  (10.5 x 10.5 x 14mm) Max.				1mH ~ 55mH	50	None					

Molded Coils モールドコイル

MC110  (ø12.3 x 17mm) Max.				0.03 μ H ~ 1 μ H	200 ~ 260 at 58MHz 200 ~ 220 at 100MHz	Pri.; 2 taps; Sec. & Tert. Available					
MC111  (8.2 x 8.2 x 13.5mm) Max.				0.03 μ H ~ 0.4 μ H	100	2 tap Available; no sec.-coil					
MC117  (ø10.4 x 10.4 x 17.5mm) Max.				0.03 μ H ~ 0.35 μ H	100 ~ 200 at 58MHz 150 ~ 200 at 100MHz	1 tap Available; no Sec.-coil; Shield Case Available					
MC119  (8.2 x 8.2 x 9.3mm) Max.				0.03 μ H ~ 0.2 μ H	50 ~ 120 at 58MHz 120 ~ 180 at 100MHz	1 tap Available; Sec.-coil Available					
MC120  (10 x 10 x 13mm) Max.				0.03 μ H ~ 0.35 μ H	120	1 tap Available; Shield Case Available					
MC131  (8.3 x 8.3 x 6mm) Max.				0.03 μ H ~ 0.15 μ H	150	Secondary Winding Available					
MC134  (7.3 x 7.3 x 13mm) Max.				0.03 μ H ~ 0.58 μ H	110	No tap Shield Case Available					
MC136  (7.5 x 7.5 x 10mm) Max.				0.03 μ H ~ 0.44 μ H	110	No tap Shield Case Available					

MC137  (7.5 x 7.5 x 6.5mm) Max.					0.05 μ H ~ 0.2 μ H	70 ~ 110 at 100MHz					Single Winding only; no tap; Shield Case Available
MC138  (7.4 x 7.4 x 14mm) Max.					0.25 μ H ~ 0.2 μ H	120 ~ 180 at 100MHz					1 tap Available; no Sec.-coil; Shield Case Available
MC139/141  (5.9 x 5.9 x 8.5mm) Max.					0.01 μ H ~ 0.23 μ H	80 ~ 150 120 at 100MHz					No Sec.-coil; Shield Case Available
MC152 (密着)  (5.1 x 5.1 x 5.5mm) Max.					0.01 μ H ~ 0.12 μ H	100 at 100MHz					No tap 1st. Sec. Coil Available; Shield Case Available
MC153  (5 x 11.4 x 5mm) Max.					0.01 μ H ~ 0.12 μ H	120					No tap 1st. Sec. Coil Available; Shield Case Available

* Surface contacting (密着)

Tape Recorder Coils テープレコーダコイル

10YS  (10.5 x 10.5 x 12mm) Max.					50 μ H ~ 40mH	150					None
10RS  (10.8 x 10.8 x 12.1mm) Max.					50 μ H ~ 10mH	120					None
10YX  (10.5 x 10.5 x 15mm) Max.					50 μ H ~ 18mH	70					None
12VXA  (ø13 x 18mm) Max.					1 μ H ~ 68mH	80					None
15RSL  (ø16 x 15mm) Max.					50 μ H ~ 25mH	150mH					None

Specifications		Freq. Range		L Range		Q (Typ.)		Int. cap. on option;	
Type		kHz 10	kHz 100	MHz 1	MHz 10	MHz 100	MHz 1	MHz 10	MHz 100

Specifications		Freq. Range		L Range		Q (Typ.)		Int. cap. on option;	
Type		kHz 10	kHz 100	MHz 1	MHz 10	MHz 100	MHz 1	MHz 10	MHz 100

Radial Fixed Coils ラジアルタイプ

7BA  (6 x 11.5 x 9.5mm) Max.			1 μ H ~ 1mH (E-24 Series)	30 Min.	None
7BS  (5.5 x 6.8 x 7mm) Max.			1 μ H ~ 1mH (E-12 Series)	50 Min.	None
8RB  (ϕ 8 x 11.2mm) Max.			100 μ H ~ 35mH (E-12 Series)	80	None
8RBC  (ϕ 9 x 10.5mm) Max.			1 ~ 45m (E-12 Series)	140	4 ~ 430pF 470 ~ 6800pF (E-12 Series)
8RBS  (ϕ 8 x 8.2mm) Max.			56 μ H ~ 15mH (E-12 Series)	60	None
8RHB *1  (ϕ 8.5 x 11mm) Max.			1 μ H ~ 1000 μ H (E-12 Series)	20	None
8RDB *2  (ϕ 8.5 x 11mm) Max.			10 ~ 220 μ H (E-12 Series)	130	None
10RB  (ϕ 10.5 x 14mm) Max.			1 ~ 120mH (E-12 Series)	70 ~ 100	None
10RBM/L  (ϕ 10.8 x 9mm) Max.			560 μ H ~ 47mH (E-12 Series)	70 ~ 100	None
10RBH  (ϕ 10.8 x 14mm) Max.			150mH ~ 1.5H (E-12 Series)	70 ~ 100	None

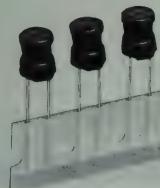
Coil for SMT 面実装コイル

43CS/43FS  (4.5 x 3.2 x 3.5mm) Max.			1 ~ 1000 μ H (E-12 Series)	50 Min	None
5CA  (6.6 x 5.8 x 4mm) Max.			0.1 ~ 5mH	30	None
5CCL/5CCD  5CCL (5.7 x 5.7 x 5.0mm) Max. 5CCD (5.7 x 5.7 x 5.5mm) Max.			10 ~ 400 μ H 10 ~ 700 μ H	50 50	5 ~ 330pF (E-12 Series) 2 Capacitance
5CCA  (5.7 x 5.7 x 6.0mm) Max.			0.1 ~ 7mH	40	None
5CDL  (5.3 x 5.3 x 2.2mm) Max.			1 ~ 300 μ H	50	None
5CE  (6.1 x 6.1 x 5.6mm) Max.			0.05 ~ 2 μ H	70	None
5CBG  (5.2 x 5.2 x 4.6mm) Max.			0.03 ~ 1.2 μ H	70	None
5CBL  (4.6 x 4.2 x 2.1mm) Max.			0.03 μ H ~ 1.2 μ H	50	None
5FS  (5.6 x 5.6 x 8mm) Max.			1 ~ 20mH	30	10 ~ 8200pF (E-12 Series) 2 Capacitance
10RF  (10 x 11 x 5.5mm) Max.			1 ~ 200 μ H	100	None
12RF  (12 x 13 x 6.5mm) Max.			1 ~ 500 μ H	100	None

*1: Available in taping form (テーピング可)

*2: Shield case available (シールドケース可)

Large current radial coils for automatic insertion 大電流用自動挿入ラジアルコイル



8RHT

Features

- Twin-terminal fixed coil with automatic insertion capability.
- Perfect for large-current choke coils of various electronic devices.

Specifications

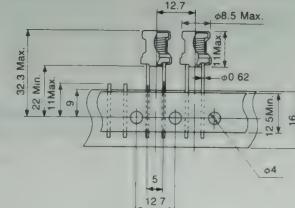
Inductance range	1μH~1mH
------------------	---------

Characteristics

	4.7μH	47μH	470μH
Q	20 Min.	30 Min.	20 Min.
DC resistance	0.03Ω	0.12Ω	1.1Ω
Rated current	4.3A	1.4A	0.46A

特長

- 自動挿入対応の2端子形固定コイルです。
- 各種電子機器の大電流用チョークコイルに最適です。



(7.5 × 22 × 7.1mm) Max.

RBT05S

Features

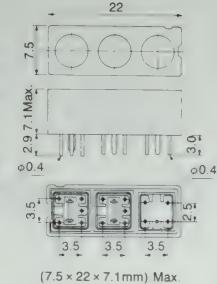
- Coil block integrating ANT/RF/OSC coils
- It is possible to change the tracking of the set non-adjusting type.
- It is possible to mount 2 tip capacitors inside the OSC coil. (It is possible to mount padding capacitor(s) inside the coil block.)

Specifications

ANT	5S
RF	5S
OSC	5VB

特長

- ANT・RF・OSCコイルを一體化したコイルブロック
- セットのトラッキング無調整可能
- OSC用コイルにはチップコンデンサ2個まで内蔵可能(ハーディングコンデンサ内付け可)



AM RF Tuning Coil Units AM RF同調ユニットコイル



(9.6 × 24 × 12mm) Max.

RBW07V

Features

- It is composed of RF and oscillator coils, tuning diodes and a padding capacitor.

Specifications

ANT, OSC	Cathode Common VCD (KV1260 usage)
Standard Vr Range	0.8~9.0V
Padding capacitor	430~490pF (E-48)
RF Coil Q.	about 200 (796kHz)

- The RF section can be designed to require no adjustments.

特長

- 小形
- RFコイル、局発コイル、VCD、ハーディングコンデンサを一體化
- RF部の完全無調整化実現



(9.5 × 34 × 10.3mm) Max.

RBT07V

Features

- Coils for the ANT, RF and OSC circuits together with two sets of paired variable capacitance diodes are included in one unit.

Specifications

ANT	7PL
OSC	7EO
RF	7PL
Padding capacitor	430~860pF
VCD	KV1260-2
Standard VT Range	1~8V

- The tracking error has been corrected and can be used without further adjustments.
- Up to three chip capacitors, including the padding capacitor, can be built-in with the OSC coil.

特長

- ANT・RF・OSCコイルおよびヘアのハリキャップターオート2個を内蔵したコイルロック
- トラッキングエラー調整済のため無調整で使用可能
- OSCコイルはチップコンデンサを3個内蔵可能(ハーディングコンデンサ含む)



(18.5 × 24 × 12mm) Max.

RBQ07V

Features

- For the two bands, MW and LW, coils for the antenna and oscillator circuits, VCDs, padding capacitors and stray capacitances have been consolidated in one unit.

Specifications

Band	MW	LW
ANT	7P	7PA
OSC	—	—
RF	7PD	7EQ
Padding capacitor	390~490pF	100~490pF
VCD	KV1260	—
Standard VT Range	1~8V	—

- RF circuits in both bands can be set so that adjustments will not be required.
- In the LW oscillator circuit, the newly developed Type 7EQ coil is used and up to four capacitors can be included for flexibility in connections.

特長

- LW, MW 2バンド用アンテナコイル、OSCコイル、VCD、ハーディングコンデンサ、ストレー容量の一体化を実現
- 特にLW OSC用には新開発の7EQタイプを使用 また、接続自由度も大。
- さらに、LW, MW 2バンドともRF部の完全無調整化を実現。



(9.7 x 27 x 7.6 mm) Max.

RBT07S**Features**

- Includes the antenna, RF and oscillator coils. With the oscillator coil, two chip capacitors can be built-in; in addition, a padding capacitor can be included.
- Can be built so that setting needs no adjustment.

Specifications

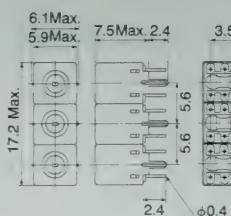
ANT	7PS Type
RF	7PS Type
OSC	7PB Type

特長

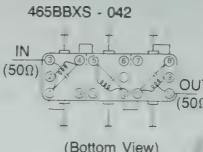
- アンテナ、RF、OSCコイルを内蔵可能。
- OSC用コイルにはチップコンデンサ2個まで内蔵。(バッティングコンデンサ内付可)
- セットの無調整化も可能。
- 自動挿入化も可能。

Duplexers for Cordless Phone コードレス電話用デュプレクサ

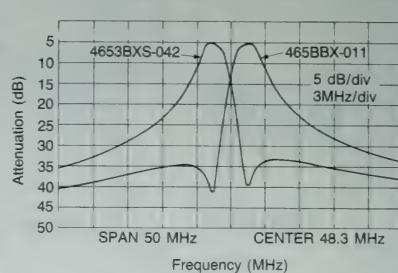
(5.9 x 17.2 x 7.5 mm) Max.

5KMT

465BBXS - 041



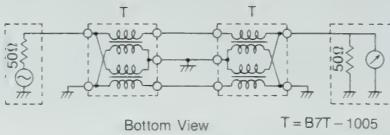
465BBXS - 042

**Surface-mounting Dual-toroidal core coil 面取めがねコア形コイル**

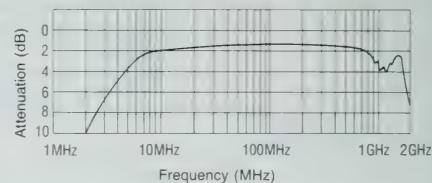
(6.9 x 6.9 x 5 mm) Max.

BSF**Features**

- Paired wires used in windings for a high degree of balancing.
- Coils can be wound for impedance conversion, double balanced mixing, circuit splitting, switching and other uses.
- Reflow soldering applicable.

Typical characteristics**特長**

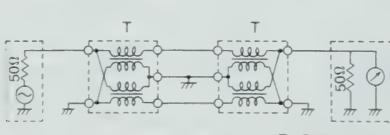
- 巻線にはペア線を使用し高い平衡度を実現。
- インピーダンス変換器、ダブルバランスドミキサ、分配器、分岐器などの各種巻線仕様が可能。
- リフローはんだ対応。

**Dual-toroidal core coil ピンタイプめがねコア形コイル**

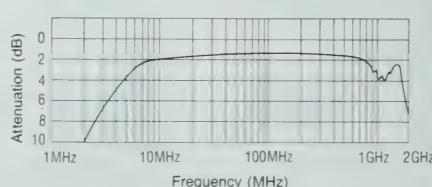
(7.2 x 7.2 x 6.8 mm) Max.

B7T**Features**

- High degree of balance realized with use of paired wires.
- Leads connected onto pin terminals for direct mounting on printed boards.
- Available for use as a double-balanced mixer, wide-band or an impedance converting transformer.

Typical characteristics**特長**

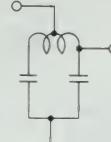
- 巻線にはペア線を使用し、高い平衡度を実現。
- ピンに末端処理のため、プリント基板に直接マウント可能。
- ダブルバランスドミキサ、広帯域トランス、インヒーダンス変換用トランスと各種用途に応じ作製可。

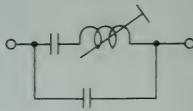
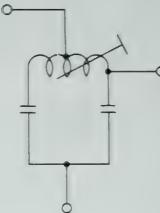


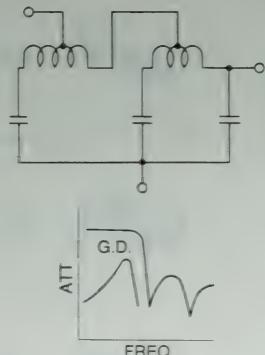
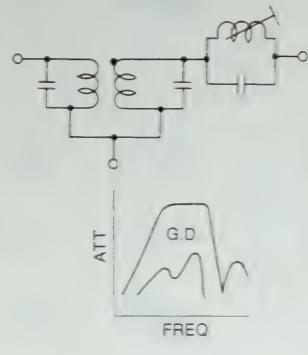
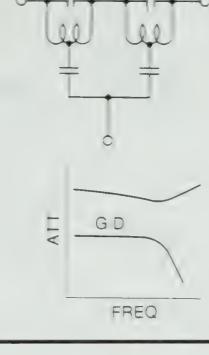
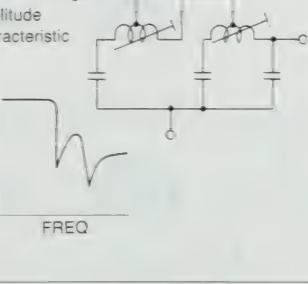
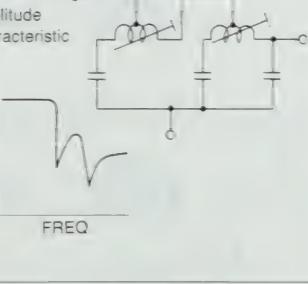
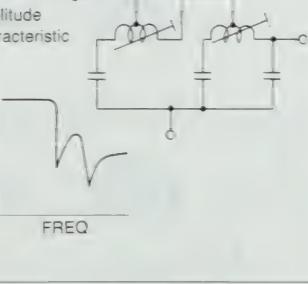
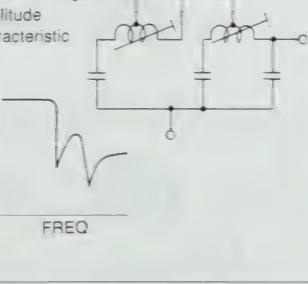
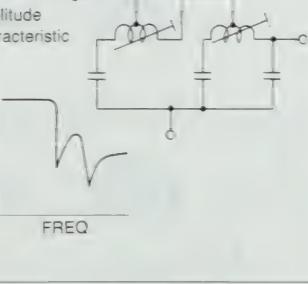
Miniature LC Filters Applications List 小形LCフィルタ 用途別一覧

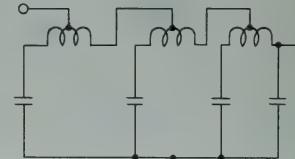
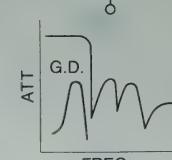
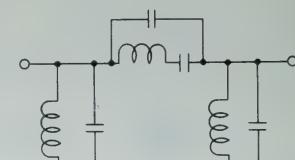
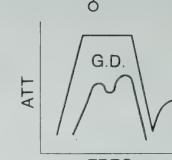
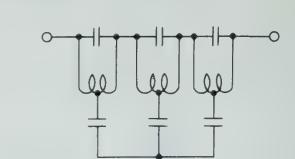
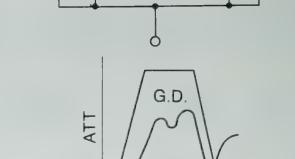
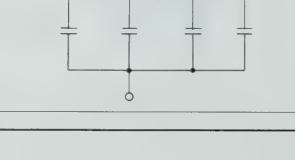
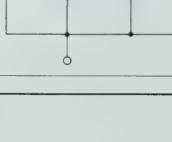
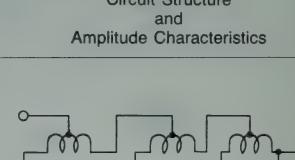
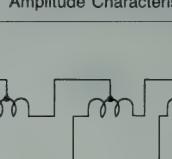
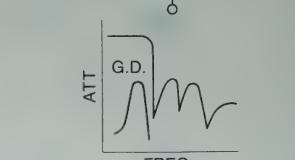
		LC Filter								
		Surface Mounting		Filter					3 Terminal	for TV
Equipment	Applicable circuit	4FL 4FU 4FN Series	5F Series	5VL 5VU 5VN Series	5VH Series	7PD	10PD	AB 07 AB 10L Series	5VF 5VFN Series	DLC
Video Disk	Video circuit			●						●
	Sound circuit									●
Video Camera	Video circuit	●		●	●					●
	Sound circuit	●	●	●	●					●
VCR	Video circuit			●	●					●
	Sound circuit			●	●					●
Color TV	Video circuit			●						●
	Sound circuit			●						●
TV (LCD)	Video circuit	●								●
	Sound circuit		●							●
Still Video Camera	Video circuit	●								●

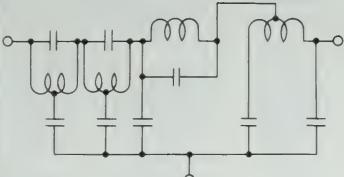
Miniature LC Filters 小形LCフィルタ

Structure	Use	Ext. Form	Type Name	Brief Description		Circuit Structure and Amplitude Characteristics
				Features	Applicable Conditions	
Single Built-in Inductor For Video Signal Circuit			4FJS (5.2 x 5.2 x 3.9mm) Max.	● Low profile ● Surface mtg.	<ul style="list-style-type: none"> Frequency range: 0.1 to 15MHz Internal capacitors: <ul style="list-style-type: none"> 4 to 750pF 2 units can be included 	 
			4FUS (5.2 x 5.2 x 5.1mm) Max.	● Surface mtg.		
			4FNS (5.5 x 5.5 x 5.1mm) Max.	● High Qu		
			5VLS (6.1 x 6.1 x 6.8mm) Max.	● Small size ● Low profile ● Pin type		
			5VUS (6.1 x 6.1 x 8mm) Max.	● Small size ● Pin type		

Structure	Use	Ext. Form	Type Name	Brief Description		Circuit Structure and Amplitude Characteristics
				Features	Applicable Conditions	
Single Built-in Inductor	For Video Signal Circuit		5VNS	<ul style="list-style-type: none"> • High Qu <p>(6.5 × 6.5 × 8mm) Max.</p>		
			4FS	<ul style="list-style-type: none"> • Surface mtg. 	<ul style="list-style-type: none"> • Frequency range: 0.1 to 15MHz • Internal capacitors: <ul style="list-style-type: none"> • 4 to 750pF • 2 units can be included 	 
			5VLS	<ul style="list-style-type: none"> • Small size • Low profile • Pin type <p>(6.1 × 6.1 × 6.8mm) Max.</p>		
			5VS	<ul style="list-style-type: none"> • Small size • Pin type <p>(6.1 × 6.1 × 8mm) Max.</p>		
Single Built-in Inductor	Sound Signal Circuit		5FS	<ul style="list-style-type: none"> • Surface mtg. <p>(5.6 × 5.6 × 8mm) Max.</p> <p>(7.5 × 7.5 × 8mm) Max.</p>	<ul style="list-style-type: none"> • Frequency range: 10 to 200kHz • Internal capacitors: <ul style="list-style-type: none"> • 10 to 1000pF • For 10pD, to 6800pF • 2 units can be included 	
			5VHS	<ul style="list-style-type: none"> • Small size • Pin type • 7mm sq. <p>(6.1 × 6.1 × 9.5mm) Max.</p>		
			10PD	<ul style="list-style-type: none"> • 10mm sq. pin <p>(10.5 × 10.5 × 16.5mm) Max.</p>		
			ABS07	<ul style="list-style-type: none"> • High Qu • Low profile <p>(9 × 9.2 × 13.5mm) Max.</p>		
Use of Two Inductors			4FJW	<ul style="list-style-type: none"> • Low profile • Surface mtg. <p>(6.2 × 10 × 3.9mm) Max.</p>		

Structure	Use	Ext. Form	Type Name	Brief Description		Circuit Structure and Amplitude Characteristics
				Features	Applicable Conditions	
Use of Two Inductors	Video Signal Circuit		4FW (5.2 x 10 x 5.1mm) Max.	• Surface mtg	<ul style="list-style-type: none"> Frequency range: 0.2 to 15MHz Internal capacitors: 4 to 750pF Up to 4 units, max., can be included Adjustable inductance structure, 1 or 2, usable in all except 4FLW, 5VNW, and 5VFNW 	
			4FNW (5.5 x 11.3 x 5.1mm) Max.	• High Qu		
			5VLW (6.1 x 12 x 6.8mm) Max.	• Small size • Low profile • Pin type		
			5VSW (6.1 x 12 x 8mm) Max.	• Small size • Pin type		
			5VNW (6.5 x 12.5 x 8mm) Max.	• High Qu		
			5VFW (6.1 x 12.2 x 8.8mm) Max.	• Surface mtg.		
			5VFNW (6.8 x 12.5 x 8.8mm) Max.	• High Qu • 3-terminals		
Sound Signal Circuit		5VHW (6.1 x 12 x 9.5mm) Max.	• Small size • Pin type	<ul style="list-style-type: none"> Frequency range: 10 to 200kHz Internal capacitors: 5VH: 10 to 8200pF ABW: 10 to 6800pF 4 units, max. 	Amplitude Characteristic	
			ABW07 (9 x 16.8 x 13.5mm) Max.			

Structure	Use	Ext. Form	Type Name	Brief Description		Circuit Structure and Amplitude Characteristics
				Features	Applicable Conditions	
Use of Three Inductors	Video Signal Circuit		4FJT	<ul style="list-style-type: none"> • Surface mtg • Low profile 	<ul style="list-style-type: none"> • Frequency range: 0.1 to 15MHz • Internal capacitors: 4 to 750pF • 6 units, max • Adjustable inductance structure, 0 to 3, usable in all except 4FLT, 5VNT, and 5VFNT 	 
			4FT	• Surface mtg.		 
			4FNT	• High Qu		 
			5VLT	<ul style="list-style-type: none"> • Small size • Low profile • Pin type 		 
			5VST	<ul style="list-style-type: none"> • Small size • Pin type 		 
			5VNT	• High Qu		 
			5VFNT	<ul style="list-style-type: none"> • Small size • 3-terminals 		 
			5VHT	<ul style="list-style-type: none"> • Small size • Pin type 		 
Use of Three Inductors	Sound Signal Circuit		5VHT	<ul style="list-style-type: none"> • Small size • Pin type 		

Structure	Use	Ext. Form	Type Name	Brief Description		Circuit Structure and Amplitude Characteristics
				Features	Applicable Conditions	
Use of Three Inductors	Sound Signal Circuit		ABT07	<ul style="list-style-type: none"> • High Qu • 7mm sq. 	<ul style="list-style-type: none"> • Frequency range: 10 to 200kHz • Internal capacitors: 5VH: 10 to 8200pF ABT: 10 to 6800pF • 6 units, max. 	
Use of Four Inductors	Video Signal Circuit		5VNQ	<ul style="list-style-type: none"> • Small size • Pin type 	<ul style="list-style-type: none"> • Frequency range: 0.1 to 15MHz • Internal capacitors: Range, 4 to 750pF; 10 units usable in 5VFNP and 8 units in others • Adjustable inductance structures, 0 to 4 units in 5VSQ and 5VFQ when required 	
			5VSQ	<ul style="list-style-type: none"> • Small size • Pin type 		
			5VFQ	<ul style="list-style-type: none"> • Small size • 3-terminal 		
			5VFNQ	<ul style="list-style-type: none"> • High Qu • 3-terminal 		
Multi-Inductor Type	Video Signal Circuit		5VFNP	<ul style="list-style-type: none"> • High Qu • 3-terminal • 5-section 		
			5VFNO	<ul style="list-style-type: none"> • High Qu • 3-terminal • 8-section 		
						Phase compensation is possible with LPF and EQA in combination

Ceramic Product Applications セラミック商品用途別一覧

Name	Type	Features	Freq. range	Application				Video equip.	Telecommuni- cation equip.	OA equip.	Other	Additional possible functions
				Radio	Radio cassette	Car radio	Headphone stereo					
AM filter	CFA	1 element	450 ~ 470kHz	●	●	●	●					
	CFM8	2 element	220 ~ 380kHz	●	●	●	●	●	●			
	CFM2	2 element	380 ~ 500kHz	●	●	●	●	●				
	CFMR	2 element, low profile	450 ~ 470kHz	●	●	●	●	●	●			
	CFMD	4 element, low profile	450 ~ 500kHz	●	●	●	●	●	●	●	●	
	CMU1	1 element	450 ~ 459kHz	●	●	●	●	●				
AM filter with built-in matching coil	CFAZ	7P + CFA  	450 ~ 470kHz	●	●	●	●	●				◆ ◆
	CFMA	7P + CFM2 	450 ~ 470kHz	●	●	●	●	●				◆ ◆
	CFML	7PL + CFMR 	450 ~ 470kHz	●	●	●	●	●				◆ ◆
	CFMT	7P + CFM2  	450 ~ 470kHz	●	●	●	●	●				◆ ◆
	CFMP	7PL + CFM2 	450 ~ 470kHz	●	●	●	●	●				◆ ◆
	CFMQ	7P + CFM2 + 7P 	450 ~ 470kHz	●	●	●	●	●				◆ ◆
	CFMY	7P + CFMD 	450 ~ 470kHz	●	●	●	●	●				◆ ◆
	CFMZ	7PL + CFMD 	450 ~ 470kHz	●	●	●	●	●				◆ ◆
	CFMJ	7PS + CFMD 	450 ~ 470kHz	●	●	●	●	●				◆ ◆
	CFSK	S series 2 element	10.3 ~ 11.0MHz	●	●	●	●	●	●	●	●	●
FM Filter	CFSK	X series 2 element, Low IL	10.3 ~ 11.0MHz	●	●	●	●	●	●	●	●	●
	CFSK	G series 2 element, GDT flat	10.3 ~ 11.0MHz	●	●	●	●	●	●	●	●	●
	CRL	C external attachment	220 ~ 380kHz					●	●	●	●	●
Oscillating element (MHz)	CRK	C external attachment	380 ~ 680kHz		●	●	●	●	●	●	●	●
	CRA	C built-in	455 ~ 500kHz			●	●	●	●	●	●	●
	CRHF	C external attachment	2.5 ~ 6MHz	●	●	●	●	●	●	●	●	●
CRHT	CRHT	C built-in	2.5 ~ 6MHz	●	●	●	●	●	●	●	●	●

▲ : glued type (C) : case type (T) : shrink tube type

◆ : glued type only recommended

AM Ceramic Filter (CERATUNE)

AMセラミックフィルタ (セラチューン)



Specifications

Center Freq. Range	450 ~ 470kHz
Center Freq. Tolerance	$\pm 2.1\text{kHz}$ or $\pm 1.1\text{kHz}$
Bandwidth, 6dB	$13 \pm 3\text{kHz}$
Selectivity, $\pm 9\text{kHz}$	6dB Min
Insertion Loss	5dB Max.

CFA

AM Ceramic Filters (CERASIZER)

AMセラミックフィルタ (セラサイザ)

CFM8
(Cerasizer)CFM2
(Cerasizer)CFMR
(Cerasizer)

Specifications

Center Freq. Range	450 ~ 470kHz
Center Freq. Tolerance	$\pm 2.5\text{kHz}$ or $\pm 1.5\text{kHz}$
Bandwidth, 6dB	5kHz Min
Selectivity, $\pm 9\text{kHz}$	18dB Min
Insertion Loss	$75.5 \pm 3\text{dB}$

CFAZ

AM Ceramic Filters (CERASIZER)

AMセラミックフィルタ (セラサイザ)

AM Ceramic Filters with Matching Coil (CERASIZER)

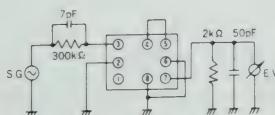
マッチングコイル付AMセラミックフィルタ (セラサイザ)

CFMA
(Triple-tuned)CFMT
(Triple-tuned)CFML
(Triple-tuned)CFMD
(Cerasizer)CFMY
(Quintuple)CFMQ
(Quintuple)CFMJ
(Quintuple)CFMZ
(Quintuple)

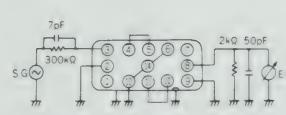
Item	Type	CFM8	CFM2	CFMR	CFMD	CFMA	CFMT	CFML	CFMQ	CFMJ, CFMZ, CFMY
Center Frequency Range		220 ~ 380kHz	450 ~ 470kHz	450 ~ 470kHz	450 ~ 470kHz	450 ~ 470kHz	450 ~ 470kHz	450 ~ 470kHz	450 ~ 470kHz	450 ~ 470kHz
Center Frequency Tolerance		± 2 or $\pm 1\text{kHz}$	± 2 or $\pm 1\text{kHz}$	± 2 or $\pm 1\text{kHz}$	± 2 or $\pm 1.5\text{kHz}$	± 2.5 or $\pm 1.5\text{kHz}$				
Bandwidth, 6dB	Z Rank	3kHz Min.	3kHz Min.	4kHz Min.	5kHz Min.	5kHz Min.	5.5kHz Min.	5.5kHz Min.	5kHz Min.	5kHz Min.
	A Rank	4kHz Min.	4kHz Min.	4kHz Min.						
	B Rank	6kHz Min.	6kHz Min.	6kHz Min.						
	C Rank	8kHz Min.	8kHz Min.	8kHz Min.						
	D Rank	10kHz Min.	10kHz Min.	10kHz Min.						
Selectivity $\pm 9\text{kHz}$ detuning	Z Rank	24dB Min.	24dB Min.	50dB Min.	25dB Min.	25dB Min.	33dB Min.	40dB Min.	40dB Min.	40dB Min.
	A Rank	18dB Min.	18dB Min.	18dB Min.						
	B Rank	16dB Min.	16dB Min.	16dB Min.						
	C Rank	12dB Min.	12dB Min.	12dB Min.						
	D Rank	9dB Min.	9dB Min.	20dB Min.						
Insertion Loss	Z Rank	7dB Max.	7dB Max.	6dB Max.	78.5 $\pm 3\text{dB}$	70 $\pm 3\text{dB}$	94.5 $\pm 3\text{dB}$	82 $\pm 3\text{dB}$	82 $\pm 3\text{dB}$	82 $\pm 3\text{dB}$
	A Rank	6dB Max.	6dB Max.	6dB Max.						
	B Rank	6dB Max.	6dB Max.	6dB Max.						
	C Rank	6dB Max.	6dB Max.	6dB Max.						
	D Rank	6dB Max.	6dB Max.	6dB Max.						

Measurement Circuit 测定回路

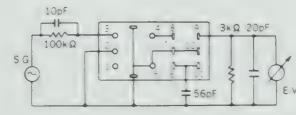
CFMA, CFML, CFMT



CFMQ



CFMJ



AM Ceramic Filters AMセラミックフィルタ



CMU1

Description

The CMU1 Series of ceramic resonators are specially designed for the search-stop signal detection in AM electronically-tuned radio sets.

Features

- High accuracy of resonating frequency.
- High stability and uniformity in characteristics.
- Can be used with an IF filter in circuit.

概要

A M電子同調ラジオのサーチストップ信号検出用セラミック共振子です。

特長

- 共振周波数の精度が良い。
- 特性的バラツキが少なく高安定です。
- IF段用フィルタとのセット納入ができます。

Specifications

Pert No.	CMU1-450AO1	CMU1-459AO1
Resonant Frequency	450±0.8 MHz	459±0.8 kHz
ΔF (Fa — Fr)	9.0±2.0 kHz	9.0±2.0 kHz
Resonant Resistance	<30Ω	<30Ω
Static Capacitance	360 pF ±20%	350 pF ±20%
Withstanding Voltage	50 VDC, 1 min.	50 VDC, 1 min.

Ceramic Oscillating Elements (CERASONATOR®) セラミック発振子(セラゾネータ®)



CRL



CRK



CRA

CRHF
(テーピング可)

CRHT

(Built-in Capacitor type)

(Built Capacitor type)

Specifications

Item	Type	CRL	CRK	CRA	CRHF	CRHT
Frequency Range		220~380kHz	380~680kHz	455~500kHz	2.5~6.0MHz	2.5~6.0MHz
Initial Freq. Tolerance		±3% Max.	±1% Max.	±1% Max.	±1% Max.	±1% Max.
Resonant Resistance		400Ω Max.	400Ω Max.	3kΩ Max.	30Ω Max.	30Ω Max.
Temp. Coefficient, (-20~+80°C)		±0.3% Max.	±0.3% Max.	±0.3% Max.	±0.5% Max.	±0.5% Max.
Aging (10 yr.)		±0.3% Max.	±0.3% Max.	±0.3% Max.	±0.3% Max.	±0.3% Max.
External Capacitors for Standard Test Circuit	C ₁	560pF	560pF (470pF)	Not used	30pF	Not used
	C ₂	560pF	200pF (200pF)	Not used	30pF	Not used

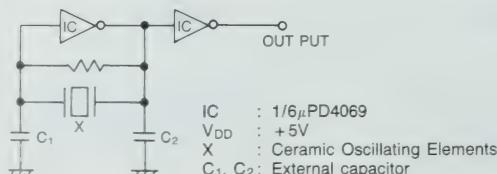
Notes: 1. Initial frequency tolerance to ±0.2% is possible in steps of 0.1% in the range given in the table.

2. Depending on the IC to be tested, different values for the external capacitors may be required.

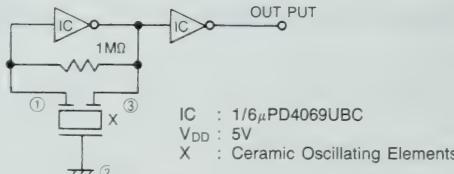
(注) 周波数の初期偏差は、上表の標準値から±1%をみて±0.2%迄可能です。*外部容量は使用するICによって異なります

Measurement Circuit 測定回路

(CRL, CRK, CRHF)



(CRA, CRHT)



FM Ceramic Filters FMセラミックフィルタ



CFSK Series

Description

The ceramic filters in the CFSK Series are specially adapted for use in the IF circuit of thin-type FM receivers.

Recently, two types of filters have been added, namely, the wide-band for satellite broadcast reception and digital communicators, and the narrow band for European and American FM program reception.

Again, depending on the application, there is a wide choice of filters available; standard "S-series", low-loss "X-series" and the "G-series" with controllable group delay.

Features

1. Low profile for suitability in small thin sets.
2. Low temperature coefficient and uniformity in performance.
3. High selectivity characteristics enable suppression of spurious signals.
4. Self-supporting terminals for ease in assembly.
5. Can be supplied with the AM filter in Kit form.

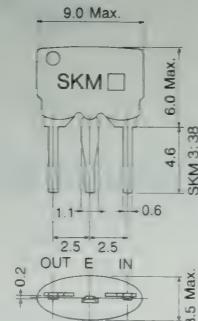
General Data

Standard center frequencies: 10.7 and 10.52MHz
Custom center frequency range: 10.3~11.5MHz.

概要

"CFSKシリーズ"は、セットの薄型化、小型化に対応して開発されたFM-IF段用セラミックフィルタです。

新たに、BSチューカやデジタル通信機器対応の広帯域品、欧洲・アメリカのFM局対応の狭帯域品が加わりました。また、用途特性から標準のSシリーズ、低損失のXシリーズ、群遅時間管理のGシリーズと製品バリエーションが広がり多様化するあらゆるご要求に対応できます。



特長

- 小形低背であり、薄形セットに最適です。
- 伝度度係数で、バラツキが少なく安定した特性を持っています。
- 高選択性特性でスリップアス相位が優れています。
- 自立形端子構造です。
- AMフィルタとのキット納入が可能です。

仕様

- 標準中心周波数 : 10.7MHz, 10.52MHz
- 対応可能中心周波数範囲 : 10.3MHz~11.5MHz

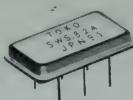
Standard "S-series"

TOKO Part Number	Bandwidth		Insertion Loss (dB) Max.	Spurious Response (dB) Min. (9~12MHz)
	3dB (kHz) Max.	20dB (kHz) Max.		
SK107M0	330±50	680	6.0	30
SK107M1	280±50	650	6.0	30
SK107M2	230±50	600	6.0	40
SK107M3	180±40	520	7.0	40
SK107M4	150±40	400	10.0	40
SK107M5	110±30	350	10.0	30

Low-loss "X-series"

TOKO Part Number	Bandwidth		Insertion Loss (dB) Max.	Spurious Response (dB) Min. (9~12MHz)
	3dB (kHz) Max.	20dB (kHz) Max.		
SK107MO-X	330±50	680	4.0	30
SK107M1-X	280±50	650	4.0	30
SK107M2-X	230±50	600	4.5	40
SK107M3-X	180±40	520	5.0	40
SK107M4-X	150±40	400	7.0	40
SK107M5-X	110±30	350	8.0	30

SAW Filters 自動車電話 第1中間周波用 SAW フィルタ



SWS

Specifications

Center Frequency (Fo)	(82MHz ~ 95MHz)
Bandwidth, 3dB	± 15kHz Min.
Insertion Loss	4dB Max.
Ripple	1.5dB Max.
Group Delay	10μs Max. at Fo ± 10kHz
Attenuation	Fo - 60kHz ~ Fo - 1000kHz, 25dB Min. Fo + 60kHz ~ Fo + 1000kHz, 25dB Min. Fo - 890kHz ~ Fo - 930kHz, 70dB Min. Fo + 890kHz ~ Fo + 930kHz, 70dB Min.
Cross Modulation	-95dBm Max. Input -20dBm
Operating Temperature	-30°C ~ +80°C

Helical Filters for Communications Equipment 通信機用ヘリカルフィルタ



5HW, 5HRW



7HW



5HT, 5HRT



7HT



CBW



(13 × 38.9 × 20mm) Max. CBT



(19 × 32 × 24mm) Max. HRW



(19 × 62 × 24mm) Max. HRQ



(6 × 11 × 4.5mm) Max. 5CHLW



(6 × 11.5 × 6.3mm) Max. 5CHW



(6 × 17.3 × 6.3mm) Max. 5CHT

Specifications

Type	5CHLW	5CHW	5CHT	5HW Double-tuned Type	5HT Triple-tuned Type	7HW Double-tuned Type	7HT Triple-tuned Type	CBW Double-tuned Type	CBT Triple-tuned Type	HRW Double-tuned Type	HRQ Quadruple-tuned Type
Applicable frequency range	800 ~ 1100 MHz	400 ~ 500 MHz	400 ~ 500 MHz	350 ~ 1500MHz		350 ~ 1200MHz		130 ~ 220MHz		350 ~ 520MHz	
Bandwidth	20MHz Min.	20MHz Min.	20MHz Min.	20MHz Min.		6MHz Min.		2MHz Min.		6MHz Min.	
Input-output Impedance						50Ω					

Miniature Dielectric Type Filters 小形誘電体フィルタ

6DFA
(2 pole)6DFB
(3 pole)

Specifications

Item	Type	E · AMPS/NMT900 (セルラー電話)		Cordless Telephone		GPS
		6DFA-836E-10	6DFB-836E-10	6DFA-914A-10	6DFB-914A-10	
Center Frequency (Fo)	MHz	836.5	836.5	914.5	914.5	1575.4
Bandwidth	MHz	Fo ± 12.5	Fo ± 12.5	Fo ± 0.5	Fo ± 0.5	Fo ± 5
Bandwidth Insertion Loss	dB Max.	1.8	2.0	2.2	4.0	1.8
Bandwidth Ripple	dB Max.	0.8	0.8	0.5	0.5	0.8
Bandwidth V.S.W.R.	Max.	2.0	2.0	1.8	2.0	2.0
Attenuation at Fo ± 77.5MHz	dB Min.	2.0	—	—	—	—
Attenuation at Fo ± 32.5MHz	dB Min.	—	12	—	—	—
Attenuation at Fo ± 45MHz	dB Min.	—	—	24	45 50	—
Attenuation at Fo ± 50MHz	dB Min.	—	—	—	—	12

Antenna Duplexers アンテナデュプレクサ

Specifications (6DPP-836E881E-10)

Item	Type	TX		RX	
		836.5MHz	881.5MHz	± 12.5MHz	± 12.5MHz
Center Frequency					
Bandwidth				2.3dB Max.	3.6dB Max.
Bandwidth Insertion Loss				1.0dB Max.	1.4dB Max.
Bandwidth Ripple				1.7 Max.	1.7 Max.
Bandwidth V.S.W.R.					
Attenuation	824 ~ 849MHz				60dB Min.
	869 ~ 894MHz			43dB Min.	
Impedance				50Ω	50Ω

6DPP



Variable Capacitance Diode Application (For AM, FM, UHF)

AM FM UHF 用電圧可変容量ダイオード用途別一覧

Type	Recommended uses					Circuits and functions			Tuning capacitance	Capacitance ratio	Operating voltage (V)	Package	Surface Mounting	Taping					
	Audio	Car radios	Video equip.	Communications equip.	Production equip.														
Circuits and functions																			
KV1226	●		●			25V series, 2 element			C _{1V} : 510 ~ 620 C _{24V} : 16 ~ 26	20	25	CB-2-4							
KV1230Z	●					● 8V series, 1 element VFO control						CB-1-2							
KV1234Z	●	●				8V series, 4 element			C _{1V} : 445 ~ 535 C _{8V} : 22.5 ~ 30.5	16.5 ~ 22	8	CB-4-8							
KV1235Z	●	●				8V series, 3 element						CB-3-6							
KV1236Z	●	●	●			● 8V series, 2 element						CB-2-4							
KV1260	●					● 8V series, 2 element, 1 chip			C _{1V} : 445 ~ 535 C _{8V} : 22.5 ~ 30.5	16.5 ~ 22	8	CB-1-3	●						
KV1260-2		●				8V series, 4 element, 2 chip						CB-2-6							
KV1280	●	●	●			7V series, 2 element, 1 chip, wide band coverage						CB-1-3							
KV1280-2		●				7V series, 4 element, 2 chip, wide band coverage			C _{1V} : 426 ~ 508 C _{7V} : 18 ~ 28	17	7	CB-2-6							
KV1281	●					● 7V series, 1 element, wide band coverage						CB-1-2							
KV1281-2	●	●	●			● 7V series, 2 element, wide band coverage						CB-2-4							
KV1281-3		●				7V series, 3 element, wide band coverage						CB-3-6							
KV1530	●			●	●	8V series, 1 element, VFO control			C _{1V} : 400 ~ 535 C _{7V} : 35 (TYP)	—	7	SOT-23	● ●						
KV1550	●	●		●	●	● 4.5V series, 2 element, 1 chip			C _{1V} : 430 ~ 490 C _{4.5V} : 20 ~ 26	16.5 ~ 20	4.5	SOT-23L	● ●						
KV1550NT	●	●		●	●	● 4.5V series, 2 element, 1 chip						TO-92							
KV1560	●					● 8V series, 2 element, 1 chip						SOT-23L	● ●						
KV1560NT	●					● 8V series, 2 element			C _{1V} : 428 ~ 506 C _{8V} : 20 ~ 27.5	17	8	TO-92							
KV1562M	●	●				8V series, 4 element, mini flat						MFP-8	● ●						
KV1563M	●	●				8V series, 3 element, mini flat						MFP-8	● ●						
KV1580	●	●	●			6.5V series, mini mold, TWIN type			C _{1V} : 415 ~ 465 C _{6.5V} : 21 ~ 27	17	6.5	SOT-23L	● ●						
KV1580NT	●	●	●			6.5V series, mini mold, TWIN type						TO-92							
KV1581	●	●	●	●	●	6.5V series, mini mold, single type						SOT-23	● ●						
KV1581A-1	●	●	●	●	●	6.5V series, mini mold, single type			C _{1V} : 415 ~ 465 C _{6.5V} : 21 ~ 27	17	6.5	CB-1-3							
KV1581A-2	●	●	●	●	●	6.5V series, mini mold, single type						CB-2-6							
KV1581A-3	●	●	●	●	●	6.5V series, mini mold, single type						CB-3-9							
KV1310NT	●	●	●	●	●	8V series, twin type			C _{2V} : 19.1 ~ 24.5 C _{8V} : 8 ~ 10.7	2.2 ~ 2.6	8	TO-92	●						
KV1310A-2	●					8V series, 2 element, twin type			C _{2V} : 20.2 ~ 24.5	2 ~ 2.6	8	CB-2-6							
KV1310A-3	●	●				8V series, 3 element, twin type			C _{2V} : 8 ~ 10.7			CB-3-9							
KV1320	●	●		●	●	25V series, twin type			C _{7V} : 19.8 ~ 23.1 C _{25V} : 6.9 ~ 8.3	2.57 ~ 3.03	25	TO-92	●						
KV1330	●	●		●	●	9V series, wide band coverage, twin type			C _{2V} : 32.6 ~ 41.8			4.5 ~ 9	TO-92	●					
KV1330A-1	●	●		●	●	9V series, wide band coverage, twin type			C _{9V} : 7.5 ~ 10.2	3.7 ~ 5	4.5 ~ 9	CB-1-3							
KV1330A-2	●	●		●	●	9V series, 2 element, wide band coverage, twin type			C _{2V} : 33.3 ~ 41			CB-2-6							
KV1330A-3	●	●				9V series, 3 element, wide band coverage, twin type			C _{9V} : 7.7 ~ 10.1	3.7 ~ 5	4.5 ~ 9	CB-3-9							
KV1340A-3	●	●				8V series, 3 element, twin type			C _{2V} : 20.8 ~ 24.3 C _{8V} : 13.5			CB-3-9							
KV1350NT	●	●		●	●	9V series, wide band coverage, twin type			C _{1V} : 29.57 ~ 32.97 C _{9V} : 5.5 ~ 6.8	4.6 Min.	4.5 ~ 9	TO-92	●						
KV1410	●	●		●	●	8V series, mini mold, twin type			C _{2V} : 19.1 ~ 24.5 C _{8V} : 8 ~ 10.7	2 ~ 2.8	8	SOT-23	● ●						
KV1420	●	●		●	●	25V series, mini mold, twin type			C _{7V} : 33.6 ~ 40.9 C _{25V} : 7.7 ~ 10.1	2.57 ~ 3.03	25	SOT-23	● ●						
KV1430	●	●		●	●	9V series, mini mold, twin type			C _{2V} : 33.6 ~ 40.9 C _{9V} : 7.7 ~ 10.1			TO-92	● ●						
KV1440	●	●		●	●	8V series, mini mold, twin type			C _{2V} : 20.8 ~ 24.3 C _{8V} : 13.5	1.55 ~ 1.85	8	SOT-23	● ●						
KV1450	●	●		●	●	9V series, wide band coverage, mini mold, twin type			C _{1V} : 29.57 ~ 32.97 C _{9V} : 5.5 ~ 6.8	4.6 Min.	4.5 ~ 9	SOT-23	● ●						
KV1470	●	●		●	●	5V series wide band coverage mini mold, twin type			C _{1V} : 65.8 ~ 74.2 C _{5V} : 12.5	5.0 Min.	5	SOT-23	● ●						
KV1812	●			●	●	8V series, mini mold single type			C _{1V} : 14.50 ~ 17.50 C _{8V} : 1.6 ~ 2.24	7.4 Min.	8	SOT-23	● ●						
KV1821	●			●	●	25V series, mini mold single type			C _{1V} : 18.4 C _{25V} : 2.61 ~ 3.04	6.48 Min.	25	SOT-23	● ●						
KV1832	●			●	●	4V series, mini mold single type			C _{1V} : 15.4 ~ 17.4 C _{4V} : 3.6 ~ 1.5	3.7 Min.	4	SOT-23	● ●						

4.5V Series Variable Capacitance Diodes for AM 4.5V系 AM用電圧可変容量ダイオード



KV1550



KV1550NT

Specifications

Item	Type	KV1550	KV1550NT
Reverse voltage (V)	15	15	
Tuning capacitance (1V)	430~490pF	430~490pF	
Tuning capacitance (4.5V)	30~38pF	30~38pF	
Capacitance ratio	11.4~16.2	11.4~16.2	
Q (1V)	200Min.	200Min.	
ΔC (1V)	2% Max.	2% Max.	

7V, 8V Series Variable Capacitance Diodes for AM 7V系, 8V系 AM用電圧可変容量ダイオード

KV1260
KV1280
KV1581A-1KV1260-2
KV1280-2
KV1581A-2

KV1581A-3

KV1230Z
KV1281KV1281-2
KV1236ZKV1281-3
KV1235Z

KV1234Z



KV1560NT

KV1530
KV1581KV1560
KV1580KV1562M
KV1563M

Specifications

Item	Type	KV1280	KV1280-2	KV1281	KV1281-2	KV1281-3	KV1230Z - KV1236Z	KV1260 - KV1260-2	KV1530	KV1560 ~ KV1563M	KV1580 SERIES KV1581 SERIES
Reverse voltage (V)		20		20			20		15	16	20
Tuning capacitance (1V)		426~508pF		426~508pF			445~535pF		400~535pF	428~506pF	415~465pF
Tuning capacitance (4.5V)		18~28pF		18~28pF			22.5~30.5pF		35pF (TYP.)	20~27.5pF	21~27pF
Capacitance ratio		17 Min.		17 Min.			16.5~22		—	17 Min.	17
Q (1V)		200 Min.		200 Min.			200 Min.		150 Min.	—	200 Min.
ΔC (1V)		15% Max.		KV1281-2 2%		KV1281-3 3%	34Z, 35Z 2%, 36Z 1%	1% Max	—	1% Max.	1% Max

25V Series Variable Capacitance Diodes for AM 25V系 AM用電圧可変容量ダイオード



KV1226

Specifications

Item	Type	KV1226
Reverse voltage		30
Tuning capacitance (1V)		510~620pF
Tuning capacitance (25V)		16~26pF
Capacitance ratio		20 Min.
Q (1V)		200 Min.
ΔC (1V)		2%
Freq. selection		available

Variable Capacitance Diodes for Wide band FM FM用電圧可変容量ダイオード(ワイドバンド対応)


KV1330NT
KV1350NT
KV1430**KV1450****KV1470**

KV1330A-1**KV1330A-2****KV1330A-3**

Specifications

Item	Type	KV1330NT	KV1330A Series	KV1430	KV1350NT	KV1450	KV1470
Reverse voltage			16V		16V		16V
Tuning capacitance (2V)			33.3~41.0pF		29.57~32.97pF (1V)	65.8~74.2pF (1V)	
Tuning capacitance (9V)			7.7~10.1pF		5.5~6.8pF	12.5pF (5V)	
ΔC			3% Max. (2V)		3% Max. (1V)	3% Max. (1V)	
r_s (70MHz)			0.5Ω Max.		0.5Ω	0.65Ω	
Capacitance ratio			3.7~5.0		4.6 Min.	5.0 Min.	

8V, 25V Series Variable Capacitance Diodes for FM 8V系, 25V系 FM用電圧可変容量ダイオード

**KV1310NT****KV1310A-2****KV1310A-3****KV1340A-3****KV1410**
KV1440**KV1320****KV1420**

Specifications

Item	Type	KV1310NT	KV1310A series	KV1340A-3	KV1410	KV1440	KV1320	KV1420
Reverse voltage				16V			30V	
Tuning capacitance (2V)	19.1~24.5pF	20.2~24.5pF	20.8~24.3pF	19.1~24.5pF	20.8~24.3pF		19.8~23.1pF (7V)	
Tuning capacitance (8V)	8.0~10.7pF	8.0~10.7pF	13.5pF TYP.	8.0~10.7pF	13.5pF TYP.		6.9~8.3pF (25V)	
ΔC (2V)			3% Max.				3% Max.	
r_s (70MHz)			0.5Ω Max.				0.5Ω Max.	
Capacitance ratio	2.2~2.6	2.2~2.6	1.65~1.75	2.0~2.6	1.65~1.75		25.7~3.03	

Variable Capacitance Diodes for UHF UHF用電圧可変容量ダイオード

KV1812**KV1821****KV1832**

Specifications

Item	Type	KV1812	KV1821	KV1832
Reverse voltage		20	26	20
Tuning capacitance	14.50~17.50pF (1V)	18.4pF (1V)	16.6pF (1V)	
Tuning capacitance	1.64~2.24pF (8V)	2.64~3.04pF (25V)	3.6~4.5pF (4V)	
r_s (70MHz)	2.10	1.0	0.7	
Capacitance ratio	7.4	6.84	3.7	

Semiconductors & IC Applications (For Communications Equip.) 通信機用半導体用途別一覧

Type	Recommended uses					Circuits and functions	Operating voltage (V)	Package	Surface Mounting	Taping
	Audio	Car radios	Video equip.	Communications equip.	Production equip.					
TK10420D, M			●			FM IF system IC (for use in cordless phones, personal radios), up to 60MHz 狭帯域FM受信システムIC(コードレスホン、パーソナル無線用)・ミクサ入力60MHz可	4~10	DP-20, MFP-20	M M	
TK10421D, M			●			FM IF system IC (for use in cordless phones, amateur radios), up to 60MHz, low voltage low current operation 狭帯域FM受信システムIC(コードレスホン、パーソナル無線用)・ミクサ入力60MHz可・低電圧低電流動作	2.7~10	DP-20, MFP-20	M M	
TK10483Z-1			●			High sensitivity FM IF system IC (for use in transceivers, radio controls, etc.), with signal meter output, up to 60MHz 高感度狭帯域FM受信システムIC(トランシーバ、ラジコンetc.)・Sメータ出力付・ミクサ入力60MHz可	2.5~9	ZP-20		
TK10485D, M			●			High sensitivity FM IF system IC (for use in cordless phones, amateur radios, etc.), with signal meter output, up to 60MHz 高感度狭帯域FM受信システムIC(コードレスホン、アマチュア無線etc.)・Sメータ出力付・ミクサ入力60MHz可	2.5~8.5	MFP-20	M M	
TK10486M			●			High sensitivity FM IF system IC (for use in cordless phones, amateur radios, etc.), with signal meter output, up to 60MHz 高感度狭帯域FM受信システムIC(コードレスホン、アマチュア無線etc.)・Sメータ出力付・ミクサ入力60MHz可	2.5~8.5	MFP-20	● ●	
TK10487M			●			High sensitivity FM IF system IC (for use in cordless phones, MCA, etc.), with wide signal meter output, up to 60MHz 高感度狭帯域FM受信システムIC(コードレスホン、MCAetc.)・ワイドSメータ出力付・ミクサ入力60MHz可	2.5~8.5	MFP-20	● ●	
TK10440M, V			●			Low voltage operating FM IF system IC (for use in pagers, cordless phones) with DATA Shaper for POCSAG, Quick charger, 1V regulator 低電圧駆動狭帯域FM受信システムIC(ペッジャー・コードレス、etc.)ボクサグ対応の波形整形回路、クイックチャージャー、1Vリギュレータ内蔵	1.1~6.0	MFP-20, VSOP-20	● ●	
TK10445M, V			●			Low voltage operating FM IF system IC (for use in pagers, cordless phones) with Quadrature Detector, 1V regulator. Low power consumption, can be used with ceramic discriminator for adjust-less. 低電圧駆動狭帯域FM受信システムIC(ペッジャー・コードレス、etc.)ケオドロチャージャー検波器、1Vリギュレータ内蔵。低消費電流、セラミックディスクリミターナーにて無調整化可能	0.9~3.5	MFP-20, VSOP-20	● ●	
TK10447M, V			●			Low voltage operating FM IF system IC (for use in pagers, cordless phones) up to 30MHz, with Quadrature Detector, 1V regulator, DATA amp., Limiter amp. 低電圧駆動狭帯域FM受信システムIC(ペッジャー・コードレス、etc.)ケオドロチャージャー検波器、1Vリギュレータ、データアンプ、リミッターアンプ内蔵。ミクサ入力30MHz可能	0.9~3.5	MFP-20, VSOP-20	● ●	
TK10650M, D			●			Cordless and regular telephone noise reduction system IC, compandor + mike amp, mute, intercom, with built in IDC circuit コードレスホン/電話用ノイズリダクションシステムIC・コンパンダ+マイクアンプ・ミュート・インターラクム・IDC回路内蔵	3~9	DP-20, MFP-20	M M	
TK10651D, M			●			Cordless and regular telephone noise reduction system IC, compandor + mike amp, splatter filter, data IN/OUT, with built in IDC circuit コードレスホン/電話用ノイズリダクションシステムIC・コンパンダ+マイクアンプ・スplatter filter・データIN/OUT・IDC回路内蔵	2.4~7	DP-20, MFP-20	M M	
TK10652M			●			A noise reduction system IC compandor + mute + through + 2 op amps for use in car telephones, cordless telephones, and MCA systems 自動車電話 コードレスホン MCA用 ノイズリダクションシステムIC・コンパンダ+ミュート+スルーチーフィルタ・データIN/OUT・IDC回路内蔵	2.4~7	MFP-20, FP20	M M	
TK10654M, V			●			A noise reduction system IC for cordless and regular telephones. Terminal for de-emphasis available (can be fit for scrambler IC) Other features are the same as TK10651 コードレスホン/電話用ノイズリダクションシステムIC・ブリエンファシス・リエンフシス用の端子付。スクランbler ICに最適。他の特性はTK10651と同等。	2.4~7.0	MFP-28 VSOP-24	● ●	
TK10655M			●			A noise reduction system IC for cordless and regular telephones. Terminal for variable MIC amp's gain. Other features are the same as TK10651 コードレスホン/電話用ノイズリダクションシステムIC・マイクアンプのゲインを外部可変可能。他の特性はTK10651と同等。	2.4~7.0	MFP-20	● ●	
TK10752Q			●			FM IF system & Noise reduction system (compandor) IC, FM IF section (Mixer, Local osc, IF amp, Noise filter, Squelch and RSSI) and compander section (with MIC amp, DATA amp, Mute, IDC, etc.) built in one chip FM IF検波部とコンパンダ部を1チップ化。ミキサー、スケルチ、Sメータ等の検波部とマイクアンプ、データアンプ、IDC等のコンパンダ部のコードレスホンに必要な機能を内蔵。	1.1~6.0	QFP-52	●	

FM-IF & Detection ICs for Communication Equipment 通信機用FM-IF検波IC



TK10483Z

TK10420M
TK10421MTK10485M
TK10486M
TK10487MTK10420D
TK10421D
TK10485D

Features

- Wide operating voltage range.
- High mixer input frequency. (455kHz ~ 60MHz)
- High limiting sensitivity. (2μV)
- Few external parts required.
- Adjustable squelch hysteresis width.
- Usable with a ceramic discriminator.

特長

- 動作電圧範囲が広い。
- ミキサ入力周波数が高い。(455kHz ~ 60MHz)
- リミッティング感度が高い。(2μV)

- 外付部品添数が少ない。
- スケルチヒステリシス幅が調整できる
- セラミックディスクリミネータが使用できる

Specifications

Item	Type	TK10420 (D, M)	TK10421 (D, M)	TK10483Z-1 TK10485-7
Supply Voltage Range		4 ~ 10V	2.7 ~ 5.5V	2.5 ~ 8.5V
Current (Squelch off)		2.5mA	1.5mA	4.4mA
Limiting Sensitivity		3μV at Vcc = 6V	6μV at Vcc = 3V	2μV at Vcc = 3V
Detected Output Voltage		550mV	220mV	
Trigger Hysteresis		100mV	40mV	80mV
Mixer Conversion Gain		20dB	16dB	25dB

TK10440M

TK10440V

Features

- Low current consumption.
- Data shaper for POCSAG available.
- Built-in comparator.
- Built-in Quick charger circuit.
- 1 volt regulator available.
- Low voltage operation (1.1 ~ 6.0 V)

特長

- 低消費電流
- DC転送可能な波形整形回路
- コンバレータ内蔵
- クイックチャージャー
- 1Vレギュレータ内蔵
- 低電圧動作。(1.1 ~ 6.0V)

Specification

Item	Standard	Conditions
Current consumption	0.8mA	Vcc = 1.4V
Limiting sensitivity	15dB μ	at -3dB point

Item	Standard	Conditions
Output level	30mVrms	Vin = 10mV
regulator output	1V	Io = 5.0mA

TK10445M

TK10445V

Features

- Low voltage operation (0.9V ~)
- High sensitivity. (3μV limiting)
- 1 volt regulator available.
- Data amp. available.

特長

- 低電圧動作。(0.9V ~)
- 高感度。(3μVリミッティング)
- 1Vレギュレータ内蔵
- データアンプ内蔵

Specification

Item	Standard	Conditions
Current consumption	1.2mA	Vcc = 1.35V
Limiting sensitivity	3μV	at -3dB point
Operating frequency	- 1.0MHz	

Item	Standard	Conditions
Output level	40mVrms	Vin = 10mV
regulator output	1V	Io = 10mA

FM-IF & Detection ICs for Communication Equipment 通信機用FM-IF検波IC



TK10447M



TK10447V

Features

- Low voltage operation (1.0V ~)
- HIGH frequency range. (-30MHz)
- High sensitivity. (2 μ V limitting)
- 1 volt regulator available.
- Dataamp. available.

Specification

Item	Standard	Conditions
Current consumption	2.2mA	Vcc = 1.35V
Limiting sensitivity	2 μ V	at -3dB point

特長

- 低電圧動作。(1.0V ~)
- 動作周波数範囲が高い。(~30MHz)
- 高感度。(2 μ Vリミッティング)
- 1Vレギュレータ内蔵。
- データアンプ内蔵。

Item	Standard	Conditions
Output level	35mV	Vin = 10mV
regulator output	1V	Io = 10mA

Compandor ICs (Noise Reduction System) コンパンダIC(ノイズリダクションシステム)



TK10651M



TK10651D

Features

- Low voltage operation: (2.4 to 7V).
- Built-in mike amp (Gain = 10 to 100 times).
- Built-in amp for splatter filter.
- Built-in data I/O terminals.
- Built-in IDC circuit.
- Mute can be controlled independently for both sending and receiving.
- Comes with through function.

Specifications

Item	Standard	Conditions
Current consumption	4.0mA	Vcc = 3V
Compressor		
Input level	12.5mVrms	Vout = 300mVrms
Gain deviation	± 1 dB	Vin = 30mVrms to -40dB

特長

- 低電圧動作 (2.4V ~ 7V)
- マイクアンプ内蔵。(GAIN = 10 ~ 100倍)
- スプラッタフィルタ内蔵
- データ入出力端子付
- IDC回路内蔵
- ミュートが送受独立にかけられる。
- スルー機能付。

Item	Standard	Conditions
Expander		
Output level	130mVrms	Vin = 30mVrms
Gain deviation	± 1 dB	Vin = 30mVrms to -30dB



TK10652M



TK10652L

Features

- Low voltage operation: 2.7 to 9.0V.
- Wide dynamic range. (80dB, min.)
- Independent muting circuits for transmission and reception.
- Use of two independent op amplifiers.
- Low current consumption. (60 μ A at standby)
- Through function provided.
- High input and low output impedances.

Specifications

Item	Standard	Conditions
Current consumption	4.5mA	
Compressor		
Output level	-24dBV	Vin = -23dBV
Total Harmonic Distortion	0.2%	Vin = -23dBV

特長

- 低電圧動作 (2.7V ~ 9.0V)
- ダイナミックレンジが広い (80dB以上)
- 送受信独立したミコート回路合成。
- 2個独立したオペアンプ内蔵。
- 消費電流が少ない (スタンバイ時60mA)
- スルー機能付
- 高入力・低出力カインピーダンス

Item	Standard	Conditions
Expander		
Output Level	-21dBV	Vin = -23dBV
Total Harmonic-Distortion	0.2%	Vin = -23dB
Amp		
Gain	19.5 ~ 20.5dB	Vin = 30mVrms
Maximum Output Voltage	1.8Vrms	T.H.D. = 10%

Compandor ICs (Noise Reduction System) コンパンダIC(ノイズリダクションシステム)



TK10654M



TK10654V

Features

- Low voltage operation (2.4 to 7V)
- Terminal for Pre-emphasis available.
- Through function available.
- Built-in amp. for splatter filter.
- Built-in data I/O terminal.
- Mute can be controlled independently for both sides (compressor & expander).
- Built-in IDC circuit.

Specification

Item	Standard	Conditions
Current consumption	4.0mA	Vcc = 1.3V
Compressor		
Input level	12.5mVrms	
Gain deviation	±1dB	Vin = 300mVrms to -40dB

特長

- 低電圧動作 (2.4V~7V)
- プリエンファシス端子内蔵。
- スルー機能付き。
- スプラッターフィルター用アンプ内蔵。
- データ入出力端子付き。
- 送受信独立ミュート可能。
- IDC回路内蔵。

TK10650M



TK10650D

Features

- Built-in compressor and expander circuits.
- Wide operating voltage: Vopr = 3 to 7V.
- Low current consumption: Icc = 3.5mA, typ.
- Low standby current: Istby = 10μA, or less.
- Mic amplifier: total gain = ×10 to ×100.

特長

- コンプレッサ回路と、エクスパンダ回路を内蔵。
- 動作電源電圧範囲が広い (Vopr = 3~7V)
- 低消費電流 (Icc = 3.5mA typ)
- スタンバイ回路により消費電流低減 (Istby = 10μA以下)
- マイクアンプ内蔵 (Total Gain = 10~100倍)

TK10655M



Features

- Low voltage operation (2.4 to 7V)
- Terminal to control mic amp gain.
- Through function available.
- Built-in amp. for splatter filter.
- Built-in data I/O terminal.
- Mute can be controlled independently for both side. (compressor & expander).
- Built-in IDC circuit.

特長

- 低電圧動作 (2.4V~7V)
- マイクアンプのゲイン設定用の端子付き。
- スルー機能付き。
- スプラッターフィルター用アンプ内蔵。
- データ入出力端子付き。
- 送受信独立ミュート可能。
- IDC回路内蔵。

TK10752Q



Features

- FM-IF & Compandor system built in 1 chip
- FM-IF section: MIXER, LOCAL OSC, IF-amp., NOISE amp., SQUELCH
- Compandor section: compressor, expander, MUTE.
- DATA amp., IDC, amp. for Splatter filters.

特長

- FM-IF検波部とコンパンダ部を1チップ
- FM-IF検波部としてミキサ・ローカルオシュレータ・ノイズアンプ・スケーリング・RSSI内蔵。
- コンパンダ部として、コンプレッサー・エクスパンダー・ミュート・データアンプ・リミッター・スプリッターフィルター用アンプ内蔵。

Specification

Item	Standard	Conditions
Current consumption	2.2mA	Vcc = 1.35V
Limiting sensitivity	2μV	at -3dB point

Item	Standard	Conditions
Output level	35mV	Vin = 10mV
regulator output	1V	Io = 10mA

Semiconductors & ICs Applications (For Power Supplies) 電源半導体 用途別一覧

Type	Recommended uses					Circuits and functions	Operating voltage (V)	Package	Surface Mounting	Taping
	Audio	Car radios	Video equip.	Communications equip.	Production equip.					
Power Supplies	TK11420~55	●	●	●	●	Low saturation local regulator, small surface mounting type, output ON/OFF control terminal, applicable for 2.0 to 8.0 volts (0.5V steps), overcurrent protection circuit and overheating protection circuit 低飽和ローカルレギュレータ・小形面実装タイプ、出力ON/OFFコントロール端子付2~8.0V(0.5Vステップ)過電流保護回路・過熱保護回路付	2.5~12	SOT-23L	●	●
	TK11520~55	●	●	●	●	Low saturation local regulator with output ON/OFF control terminal, applicable for 2.0 to 8.0 volts (0.5V steps), overcurrent protection circuit and overheating protection circuit 低飽和ローカルレギュレータ・出力ON/OFFコントロール端子付2~8.0V(0.5Vステップ)過電流保護回路・過熱保護回路付	2.5~14	MFP-8	●	●
	TK11620~55	●	●	●	●	3 terminal regulator series, low saturation, applicable for 2 to 9.0V (in 0.5V steps) 3端子レギュレータシリーズ・低飽和・2~9.0V(0.5Vステップ)対応可能	2.5~14	TO-92	●	●
	TK11701M	●	●	●	●	Programmable regulator, low saturation, 1.5 to 9.25V (in 0.25V steps) optional output プログラマブルレギュレータ・低飽和・1.5V~9.25V(0.25Vステップ)、任意出力	3.1~18	MFP-8	●	●
	TK10681/2M	●	●	●	●	Low saturation local regulator with output ON/OFF control, output 5V or variable, low level ON (681), high level ON (682M) 低飽和ローカルレギュレータ・出力(ON/OFF制御・出力5Vまたは可変・ローレベルON(TK10681M)/ハイレベルON(TK10682M))	3.1~18	MFP-8	●	●
	TK10501M		●	●	●	Motor control IC, forward/reverse/Idle/brake modes, speed control, low current consumption モータコントロールIC・正転/逆転/待機/ブレーキモード切換・スピードコントロール・低消費電流・過電流保護回路・過熱センサー回路内蔵	4~14	MFP-8	●	●
	TK10502M		●	●	●	Motor control IC, forward/reverse/Idle/brake modes, speed control, low current consumption, Internal Thermal Shutdown & Short Circuit Protection available モータコントロールIC・正転・逆転・待機・ブレーキモード切換・スピードコントロール・低消費電流・過電流保護回路内蔵。PNPトランジスターにて低飽和駆動可能。	4.4~14.0	MFP-8	●	●
	TK10503M		●	●	●	Motor control IC, forward/reverse/Idle/brake modes, speed control, low current consumption, Internal Thermal Shutdown & Short Circuit Protection available, with PNP transistor lbg saturation operation can be available モータコントロールIC・正転・逆転・待機・ブレーキモード切換・スピードコントロール・低消費電流・過電流保護回路内蔵。PNPトランジスターにて低飽和駆動可能。	4.0~14.0	MFP-14	●	●
	TK11806M, Z	●	●	●	●	DC/DC converter, output 1 channel, selectable between 9.3, 13, 17, 24, 28, 32V DC/DCコンバータ・出力1チャンネル・9.3, 13, 17, 24, 28, 32V選択可能	1.1~18	MFP-8, ZP-10	M	M
	TK11821M	●		●	●	DC/DC converter, fixed output 10V or 24V, low noise, for AM/FM/UHF band receiver DC/DCコンバータ・固定出力10Vor24V・ローノイズ・AM/FM/UHF帯受信用	0.9~10	MFP-8	●	●
Other	TK10468Z			●	●	Regular + battery checker + power amp. (will lcc cut) レギュレータ+バッテリチェック+パワーアンプ(lccカット付)	2~6	ZP-10		
	TK10446M			●	●	Regulator system IC for Pager, 1V regulator + DATA amp. ペジャー用レギュレータシステムIC。1Vレギュレータ、コンバレータ。	1.1~3.5	MFP-8	●	●

Local Regulators (Surface Mounting) ローカル レギュレータ(面実装用)



TK114□□ Series

Features

- Small difference between input and output voltages. (0.2V at $I_{out} = 80mA$)
- Low current consumption. ($400\mu A$ at $I_{out} = 0mA$ and $2mA$ to $I_{out} = 60mA$)
- Overcurrent protection provided.
- Overheating preventer provided.
- ON/OFF control possible for output voltage ($0.1\mu A$ at output off).

特長

- 入出力電圧差が小さい(0.2V at $I_{out} = 50mA$)
- 低消費電流($500\mu A$ at $I_{out} = 0mA, 2mA$ to $I_{out} = 60mA$)
- 過電流保護回路内蔵。
- 過熱保護回路内蔵。
- 出力電圧ON/OFF制御可能($0.1\mu A$ at 出力OFF)

Specifications

Type	TK114□□
Input Voltage Range	2.5 to 12V
No Load Input Current	$500\mu A$
Line Regulation	0.04%/V *1
Load Regulation	0.02%/mA *2
Output Current, Max.	70mA
Output Voltage	2.0 to 8.0 (0.5V steps)
Output Voltage Tolerance	Dependent on Output Voltage

*1 $V_{in} = (V_o + 1) \sim (V_o + 6)$ *2 $I_o = 0mA \sim 60mA$ 

TK115□□ Series

Features

- Small difference between input and output voltages. (0.2V at $I_{out} = 80mA$)
- Low current consumption. ($400\mu A$ at $I_{out} = 0mA$ and $2mA$ to $I_{out} = 60mA$)
- Overcurrent protection provided.
- Overheating preventer provided.
- ON/OFF control possible for output voltage ($0.1\mu A$ at output off).
- Boost is possible at low saturation.

特長

- 入出力電圧差が小さい(0.2V at $I_{out} = 80mA$)
- 低消費電流($500\mu A$ at $I_{out} = 0mA, 2mA$ to $I_{out} = 60mA$)
- 過電流保護回路内蔵。
- 過熱保護回路内蔵。
- 出力電圧ON/OFF制御可能($0.1\mu A$ at 出力OFF)
- 低饱和のままブースト可

Specifications

Type	TK115□□
Input Voltage Range	2.5 to 14V
No Load Input Current	$500\mu A$
Line Regulation	0.02%/V *1
Load Regulation	0.01%/mA *2
Output Current, Max.	100mA
Output Voltage	2.0 to 8.0 (0.5V steps)
Output Voltage Tolerance	Dependent on Output Voltage

*1 $V_{in} = (V_o + 1) \sim (V_o + 6)$ *2 $I_o = 0mA \sim 60mA$

Local Regulators (3-Terminal) ローカル レギュレータ(3端子)



TK116□□ Series

Features

- Small difference between input and output voltages. (0.2V at $I_{out} = 80mA$)
- Low current consumption. ($400\mu A$ at $I_{out} = 0mA$ and $2mA$ to $I_{out} = 60mA$)
- Overcurrent protection provided.
- Overheating preventer provided.

特長

- 入出力電圧差が小さい(0.2V at $I_{out} = 80mA$)
- 低消費電流($400\mu A$ at $I_{out} = 0mA$, $2mA$ to $I_{out} = 60mA$)
- 過電流保護回路内蔵。
- 過熱保護回路内蔵。

Specifications

Type	TK116□□
Input Voltage Range	2.5 to 14V
No Load Input Current	$400\mu A$
Line Regulation	0.01%/V *1
Load Regulation	0.02%/mA *2
Output Current, Max.	100mA
Output Voltage	2.0 to 9.0V (0.5V steps)
Output Voltage Tolerance	Dependent on Output Voltage

*1 $V_{in} = (V_o + 1) \sim (V_o + 6)$ *2 $I_o = 0mA \sim 60mA$

Local Regulators (Surface Mounting) ローカルレギュレータ(面実装用)



TK10681M



TK10682M

Features

- Small difference between input and output voltages. (0.18V at $I_{out} = 75mA$)
- Fixed output at 5V, or variable from 1.5— V_n —0.7V.
- Wide operating voltages, 3.1 to 18V.
- Low standby current. ($0.01\mu A$)
- Direct drive of control terminals possible with use of a CMOS gate.

特長

- 入出力電圧差が小さい。(0.18V at $I_{out} = 75mA$)
- 出力電圧5V固定または1.5— V_n —0.7V可変。
- 最大出力電流が大きい。(150mA)
- 広い動作電圧。(3.1~18V)
- スタンバイ時消費電流が少ない。(0.01 μA)
- コントロール端子はCMOSゲートによる直接駆動可変。

Specification

Item	Standard	Conditions
Current Consumption (during no load) (mA)	3.5	$V_{in} = 18V$
Current Consumption (during standby) (μA)	0.01	control terminals

Item	Standard	Conditions
Line Regulation (mV)	100	$5.7V < V_{in} < 18V$
Load Regulation (mV)	150	$1.0mA < I_{out} < 150mA$
Ripple Reduction Ratio (dB)	45	$f = 1kHz$

Programmable Regulator プログラマブル レギュレータ



Features

- Small difference between input and output voltages.
- Overcurrent protection provided.
- Short circuit protection provided.

TK11701M

特長

- 入出力電圧差が小さい
- 過電流保護回路内蔵
- 出力短絡保護回路内蔵

Programmable regulators

Type	TK11701M
Input Voltage Range	3.1 to 18V*
No Load Input Current	4mA
Input Regulation	7mV ($V_{in} = 3.1$ to 10V)
Load Regulation	150mV ($I_{out} = 1$ to 90mA)

Type	TK11701M
Output Current, Max.	100mA
Output Voltage	1.5 to 9V (0.25V steps)
Output Voltage Tolerance	Dependent on output voltage

*Depends on power rating of packaging.

IC for Low Power Motor Control ローパワー可逆転モータコントローラIC



TK10501M

Features

- Stable load voltage is applied against variations in the supply voltage.
- Minimum current consumption, $0.15\mu\text{A}$, TYP., at standby.
- Wide range of variable speed control—
Maximum supply voltage:
Up to 6V with variable resistor and internal reference voltage,
or with $\text{Vcc} - 1.5\text{V}$ using external reference voltage.
- CMOS drive is possible for the motor mode switching.
- Overheating sensor and overcurrent protection circuit built in.

特長

- 電源電圧の変動に対し安全な負荷電圧を供給します。
- 待機時の消費電流が微少。(標準 $0.15\mu\text{A}$)
- スピードコントロール範囲が大きく連続可変できます。
モータへの最大供給電圧: 可変抵抗と内蔵リファレンス電圧により6Vまで
外部リファレンス電圧により $\text{Vcc} - 1.5\text{V}$ まで。
- モータのモード切り換えはCMOSドライブが可能。
- 過熱センサー、過電流保護回路内蔵。

Specifications

Item	Conditions
Operating Voltage Range	4 to 16V
Motor Driving Voltage	0 to 6V (with internal reference)
Motor Driving Current	150mA, max.

Item	Conditions
Current Consumption (at standby)	$0.15\mu\text{A}$, standard
Current Consumption (at braking)	8mA standard
Reference Voltage	2.2V ($\text{Iout} = 1$ to 3mA)

ICs for Motor Drive カムコード用モータドライバーIC



TK10502M



TK10503M

Features

- Four conditions, forward, reverse, braking, free run, controlled with TTL levels.
- Built in speed control circuit.
- Over load protection & thermal protection avarable.
- Low current consumption in control circuit; direct drive with C-MOS gate.
- Low stand-by current, $\text{Icc} = 0.15\mu\text{A}$ (TYP)
- With the PNP transistor, low saturate operation can be use.

特長

- 正逆転、ブレーキ、フリーの4値をロジックレベルでコントロールできる。
- スピードコントロール回路内蔵。
- 過電流、過熱センサ回路内蔵。
- コントロール回路電流が少なく、C-MOSゲートにて直接駆動できる。
- 待機時の電流はTYP $=0.15\mu\text{A}$ と微少である。
- 外付けPNPトランジスタにて低飽和駆動可能。(TK 10503)

Type	TK10502M	TK10503M
Input. Voltage Range	4 to 14V	
Current Consumption	$0.15\mu\text{A}$	
Output Voltage Load-1	20mV	
Output Voltage Load-2	60mV	
Output Saturation Voltage	230mV	
Control logic level L	0.6V	
Control logic level H	2.4V	
Control logic	$100\mu\text{A}$	

DC-DC Converters for VCD Drive DC-DCコンバータ



TK11806Z

Features

- Wide input voltage range, Vcc 1.1 to 18V.
- Two types of packaging available, MFP and Zip.
- Self-contained rectifier diodes.
- Six output voltages selectable, see table.

Main Electrical Characteristics
(Ta = +25°C)

Item	TK11806 (M, Z)		
Output Voltage (V)	9.3	13	17
Output Current (mA)	26	28	30
Output Voltage Regulation (%)	1.5		

TK11806M

特長

- 動作電圧範囲が広い Vcc 1.1~18V
- 2種類のパッケージを用意 MFP、Zip
- 整流ダイオード内蔵
- 出力電圧は9.3V、13V、17V、24V、28V、32Vより1出力任意選択

Item	TK11806 (M, Z)
Variable Output Voltage (V)	—
Osc. Starting Voltage (V)	1.1

DC-DC Converters for VCD Drives DC-DCコンバータ



TK11821M

Features

- Oscillating start-up voltage is low; 0.75V, typ.
- Oscillator frequency, 4MHz (since wave).
- Wide operating voltage range, 0.9 to 10V.
- Output voltage is selectable in the 10 to 24V range.

Specifications

Item	Standard	Conditions
Oscillating start-up voltage (V)	0.75	Iout = 0mA
Maximum output current (μA)	100	—

特長

- 発振開始電圧が低い TYP = 0.75V
- 4MHzの発振周波数 (正弦波形)
- 動作電圧範囲が広い 0.9V~10V
- Vout 10Vまたは24V選択出力

Item	Standard	Conditions
Output voltage fluctuation (%)	0.05	—

Regulator + Battery Checker + Power Amplifier For Cordless Telephones

レギュレータ+バッテリチェック+パワーアンプ



TK10468Z

特長

- レギュレータ部: 低飽和電圧
- バッテリチェック部: LEDライハ内蔵
- パワーアンプ部: 電流カット回路内蔵で待機時の消費電流が微小。

Features

- Regulator: Low saturation voltage.
- Battery checker: LED, with internal drive.
- Power amplifier: Minimum current requirement at cut-off condition.

Specifications

Item	Standard	Conditions
Difference between input and output voltage	0.06V	Regulator Section
Voltage check	Variable	Battery checker

Item	Standard	Conditions
Temperature coef.	0.47mV/°C	Battery checker
Voltage gain	34dB	Power Amplifier Section
Maximum output	45mW	Power Amplifier Section

1V Regulator for Pager ペジャー用1Vレギュレータ



TK10446M

Features

- Low voltage operation (1.1V~)
- 1V regulator and OP amp. built in one chip
- Precise output voltage within 1V±50mV

Specifications

Item	TYP	Condition
Output 1	1.0V	Vin = 1.10V, I _o = 10mA
Output Voltage 2	1.0V	Vin = 1.70V, I _o = 0mA
Output Voltage 3	0.85V	Vin = 0.9V, I _o = 1mA
DATA AMP		
Input Impedance	100kΩ	
Output Vol	0.7VPP	

特長

- 低電圧動作(1.1V~)
- 1パックにレギュレータとコンバータ (OP AMP) を内蔵。
- 温特、ロードレギュレーション、電源変動を含め1V±50mVに入る。

Semiconductors & IC Applications (For Analog Switches) アナログスイッチ用半導体 用途別一覧

Type	Recommended uses					Circuits and functions	Operating voltage (V)	Package	Surface Mounting	Taping
	Audio	Car radios	Video equip.	Communications equip.	Production equip.					
Analog Switches	TK15021Z, M	●	●	●		2 circuit 2 position independent operation analog switch, low distortion ratio (0.005%), high I/O impedance 75kΩ, low output impedance 20Ω 2回路2接点独立動作アナログスイッチ・低歪率(0.005%)・高入力インピーダンス75kΩ・低出力インピーダンス20Ω	3~20	MFP-40, ZC-10	M	
	TK15022Z, M	●	●	●		2 circuit 2 position independent operation analog switch, low distortion ratio (0.005%), high I/O impedance 75kΩ, low output impedance 20Ω 2回路2接点独立動作アナログスイッチ・低歪率(0.005%)・高入力インピーダンス75kΩ・低出力インピーダンス20Ω	1.8~15	MFP-14, ZP-10	M	M
	TK15023Z	●	●	●		2 circuit 3 position (mute) analog switch, low distortion ratio (0.005%), high I/O impedance 75kΩ, low output impedance 20Ω 2回路3接点(ミュート)アナログスイッチ・低歪率(0.005%)・高入力インピーダンス75kΩ・低出力インピーダンス20Ω	1.8~16	ZP-10		
	TK15027M, Z	●	●	●		2 circuit interlock 2 position analog switch, low distortion ratio (0.005%), Output floating position (to make positions multiply) other features are the same as TK15021 2回路連動2接点アナログスイッチ・低歪率(0.005%)・高入力インピーダンス75kΩ・低出力インピーダンス20Ω	1.8~15.0	MFP-14, ZIP-10	M	M
	TK15080D, M	●	●	●		2 circuit interlock 4 position analog switch, low distortion ratio (0.005%), high I/O impedance 75kΩ, low output impedance 20Ω 2回路連動4接点アナログスイッチ・低歪率(0.005%)・高入力インピーダンス75kΩ・低出力インピーダンス20Ω	1.8~16	DP-16, MFP-20	M	M
	TK15120M	●	●	●	●	2 circuit MUTE for audio signals, attenuation 86dB, low distortion ratio (0.0025%), possible to set ON/OFF time 2回路オーディオミュート用・減衰量86dB・低歪率(0.0025%)・オンオフ時間設定可	4.5~10	MFP-8	M	M
	TK15064Z	●	●	●		2 circuit 2 position independent analog switch (for video signals) 2回路2接点独立動作アナログスイッチ(ビデオ信号用)	5~10	ZP-10		
	TK15065Z	●	●	●	●	1 circuit 2 position independent analog switch (for video signals) 1回路2接点独立動作アナログスイッチ(ビデオ信号用)	4~7	ZP-10		
	TK15066Z	●	●	●	●	1 circuit 2 position independent analog switch (for video signals) 1回路2接点独立動作アナログスイッチ(ビデオ信号用)	4~7	ZP-10		
	TK15067M, Z		●	●	●	1 circuit 2 position independent analog switch (for video signals) 1回路2接点独立動作アナログスイッチ(ビデオ信号用)	4~7	MFP-8, ZP-10	M	M

Semiconductors & IC Applications (For Audio Equip.) オーディオ用半導体 用途別一覧

For Audio Equip.	TK10840M	●		●		TV audio MPX signal demodulator IC for headphone stereos (Japan), low voltage operation, automatic selection between monophonic and MPX, erratic operation preventer, PLL detection ヘッドホンステレオ用テレコ音声多重信号復調IC(日本)・モノラル/多重自動切替・誤動作防止・PLL検波	0.9~5	MFP-20	●	●
	TK10850M	●		●		TV audio MPX signal demodulator IC for LC TVs (Japan), automatic selection between monophonic and MPX, erratic operation preventer, 1cc outoff 液晶TV用テレビ音声多重信号復調IC(日本)・モノラル/多重自動切替・誤動作防止・PLL検波・オートセバコン・ICカット	2.7~12	MFP-20	●	●
	TK10581M	●					1.6~6	MFP-20	●	●
	TK10585M	●				2 channel 3-element graphic equalizer for headphone stereos, low distortion (0.05%), ±10dB control range, built-in ripple filter ヘッドホンステレオ用2ch3要素グラフィックイコライザ・低歪率0.05%・コントロールレンジ±10dB・リップルフィルタ内蔵	1.6~5	MFP-28	●	●
	TK10590M	●					1.0~3.6	MFP-30	●	●

Analog Switch ICs (Audio Band) アナログスイッチ用IC(オーディオ帯域用)



TK15021M

TK15021Z

TK15022Z

TK15023Z

TK15080D

Features

- Wide range of operating voltage.
- Switchable at the DC level.
- Low distortion: < 0.005%.
- High input impedance: 75kΩ.
- Wide dynamic range. (4.5Vrms).
- Low output impedance: 20Ω.

特長

- 動作電圧範囲が広い。
- 直率が良い。(0.005%)
- ダイナミックレンジが広い。
- コントロールはDCレベルにて行える。
- 入力インピーダンスが高い。(75kΩ)
- 出力インピーダンスが低い。(20Ω)



TK15120M

TK15120M

- Large attenuation (TYP. -86dB).
- Selectable muting (ON/OFF time.)
- Maximum input voltage 5Vp-p.
- Grounded muting.

TK15120M

- 減衰量が大きい。(Typ. -86dB)
- ミューティングON、OFF時間設定可能。
- 最大入力電圧5Vp-p
- GND接地ミューティング

Analog Switch ICs (Video Band) アナログスイッチ用IC(ビデオ帯域用)



TK15067M



TK15064Z



TK15065Z



TK15066Z



TK15067Z

Features

- Good frequency characteristics.
- Wide dynamic range.
- Small switch insertion loss.
- Little crosstalk.

特長

- 周波数特性が良い。
- ダイナミックレンジが広い。
- スイッチ挿入ロスが少ない。
- クロストークが少ない。

Multiplex Sound Signal Demodulator for TV sets テレビ音声多重信号復調IC(日本国内用)

JAPAN Channels



TK10840M



TK10850M

Features

- Efficient operation possible with voltage as low as 0.9 volts.
- The PLL detection method is used in demodulating the sub-channel signal.
- A circuit for automatically discriminating the monophonic and multiplex sound signals is included.
- To prevent faulty operation of the discriminator, a 2-stage lock (capture range) automatic switchover circuit is used in addition to a discriminator level adjusting circuit.
- An operation amplifier for the subchannel signal selecting active filter has been included; this eliminates the need for an expensive external filter.

特長

- 減電特性に優れており、電源電圧0.9Vまで動作します。
- 副チャンネル信号の復調にはPLL検波方式を採用。
- モノラル/多重自動判別回路を内蔵。
- モノラル/多重自動判別の誤動作を防止するためにロック・キャプチャレンジ2段階自動切り替え回路及び多重判別レベル可変回路を内蔵。
- 副チャネル信号抽出アクティブフィルタ用オペアンプを内蔵。高価な外付けフィルタは不要。

ICs for Audio Graphic Equalizer & Loudness Control グラフィックイコライザIC



TK10581M

TK10585M

TK10590M

Features

- Low voltage operation: 1.6 to 5V, TK10590M: 1.0 to 3.6V.
- 2-channel structure in mini-flat packaging for small space requirements.
- Low current consumption.
- Superior ripple rejection.

特長

- 低電圧動作 (1.6~5V) TK10590Mは1.0~3.6V
- 2チャンネル構成のため省スペースで設計可能
- ブルージュクションを負
- 低消費電力

Semiconductor & IC Applications 数値制御用半導体 用途別一覧

Numerical Control (s)	Type	Recommended uses				Circuits and functions	Operating voltage (V)	Package	Surface Mounting Taping
		Audio	Car motion	Video equipment	Communication equipment				
	KM3701AD					For NC function generators (linear, arc, parabolic, index, logarithmic interpolation), 454 kbps (linear, 236 kbps, and others), 数値制御 関数発生用 直線、円弧、放物線 指数、対数、補間、454 kbps 直線 236 kbps その他	5	DP-28	
	KM3702AD KM3702AQ					For NC positioning controller (DA pattern output 8 to 16 bit variable absolute coordinate detection) 数値制御 位置制御用 DAパターン出力8~16ビット可変・絶対座標値検出	+5	DP40 QFP-60	Q
	KM3703D					For NC rotary encoder interface (output pulse: 1 to 4 increments, clock freq: 1.5MHz) 数値制御 ロータリエンコーダインターフェス用(出力パルス1~4連倍) ・クロック周波数 1.5MHz	+5	DP-16	

LSI for Numerical Controls 数値制御用LSI



KM3701AD

Function Generator KM-3701AD

We have developed a high-speed version of a function generator used for contour interpolation function in numerical control systems. This device distributes contour controlling command pulses at high-speed using the coordinate value and interpolation configuration data.

Features

- Adapted for miniaturization and low cost.
- Data accuracy is 24bit in length.
- On-line readout of present position.
- Control of fixed speed.
- End point determination.
- Direct interface with 8 bit CPU.
- Perfect TTL compatible input/output
- On-line data read/write
- Interrupt output
- Single TTL clock

Main Applications

- Function Generation Linear, arc, parabola, exponential and logarithmic
- Maximum settable Coordinate Value $\pm 8.388607m$ (at minimum settleable unit = 1 μm)
- Interpolation Pulse and Tool Shift Speeds

関数発生用 KM3701AD

数値制御装置における輪郭補間制御用として新たに開発されたLSIを発表しました。座標値データ、補間形データによって、輪郭制御に指令データを高速度で与記

特長

- 装置の小型化とコスト低減
- 24ビット長のデータ精度
- 現在位置のオンライン読み出
- 一定速度制御
- 終点検出
- 8ビットCPU直接接続
- 完全TTL・エンドツールデータ出力
- オンライントラック出力
- オンライントラックモード

主な仕様

主な機能 数値直線、円弧、放物線、指数、対数
最大設定座標値 $\pm 8.388607m$ 最大設定単位 $1\mu m$ として
補間 $\pm 8.388607m$ として移動速度

LSI for Numerical Controls 數値制御用LSI



KM3702AD



KM3702AQ

Position Controllers KM-3702AD and KM-3702AQ

These CMOS LSIs have been developed as position controllers for use in numerical control systems.

These devices control DC motors through the servo amplifier by generating D/A converter control signals which depend on differences between the interpolation pulse command and feedback inputs from an encoder.

Features

- 32-bit length counter.
- Clock frequency: 10MHz max.
- Position zone setting (near zero): Select with 8 bits.
- Alarm zone setting (over-zone): Select with 8 bits.
- With command counter, readout of absolute coordinate values is possible.
- Detection of servo error.
- Data preset to the counter.
- Interrupt output.
- Direct interface with 8 bit CPU.
- Perfect TTL compatible input/output.
- + and - FB rotary encoder (functions of the KM3703D)
- Command counter comparison output terminal (only with the KM3702AQ).
- Hard reset for the command counter and error counter (only with the KM3702AQ)

Main applications

Pattern output speed: 2μS at clock frequency, 2MHz.
Saturation zone setting: Select with 8 to 16 bits.

位置制御用 KM3702AD, KM3702AQ

数値制御装置の位置制御用として開発したCMOS LSIです。

補間パルスによる指令入力とエンコーダからのフィードバック入力の偏差に応じて、D/A変換器制御信号を発生し、サーボアンプ回路をへてDCモータを制御。

特長

- 32ビット長カウンター
- クロック周波数最大10MHz
- ポジション・ゾーン(ゼロ近傍検出)の設定: 8ビットで選択。
- アラーム・ゾーン(オーバ・レンジ)設定: 8ビットで選択。
- コマンド・カウンタにより絶対座標値を読出可能。
- サーボ・エラー検出。
- カウンタへのデータプリセット。
- インターラプト出力。
- 8ビットCPU直接インターフェース。
- 完全TTL・コンパチブル入出力。
- ±FBロータリエンコーダ(KM3703Dの機能)
- コマンドカウンタとの比較出力端子(KM3702AQのみ)
- コマンドカウンタ・エラーカウンタのハードリセット(KM3702AQのみ)

主な仕様

パターン出力速度: 2μS (クロック周波数2MHz)

サチレーション・ゾーンの設定: 8~16ビット選択。



KM3703D

Rotary encoder Interface KM-3703D

This CMOS LSI is designed for two phased incremental type rotary encoders used in numerical control systems.

Using two signals from an encoder which have a phase difference of 90 degrees, this device detects the direction and is used as an interface for general-purpose rotary encoders with one, two and four times the pulse multiplication circuit.

Features

- Output pulses, single, double and quadruple, can be selected as required.
- TTL drive is possible.

Main Applications

● Clock frequency: 1.5MHz, maximum.

ロータリ・エンコーダ・インターフェース用 KM3703D

数値制御装置の2相インクリメンタル型ロータリ・エンコーダ用として設計したCMOS LSIです。

エンコーダから得られる90度位相差のある2信号によって方向判別、1倍・2倍・4倍ハルス倍増回路を持つ汎用形ロータリ・エンコーダのインターフェースです。

特長

- 出力ハルスは、1・2・4倍を任意選択可能。 ● TTL ドライブ可能

主な仕様

クロック周波数: 最大1.5MHz

Switch Applications スイッチ 用途別一覧

Class	Type	Application	Audio Equip.			Video Equip.		Comment						
			Radios	Radio cassettes	Stereos	TVs	VCRs/VTRs	OA equip.	FA equip.	Computer peripherals equip.	Measurement equip.	Communication equip.	Medical equip.	Household appliances
For power switches	Push	F	●	●	●	●	●	●	●	●	●	●	●	General use
		FO	●	●	●	●	●							Light operation
		FU						●	●	●	●	●	●	Au plated contacts
		TF	●	●	●	●	●							Stroke 2.5mm
		TM	●	●	●	●	●							Stroke 2mm
For keyboard switches	Push	NE15-DD NE15-DS NE15-RD NE15-RS												AC 250V 4A
		TPS						●	●	●	●	●	●	1 Circuit 250V AC 3A
		TPD						●	●	●	●	●	●	2 Circuit 240V AC 3A
		R-7000	●	●	●	●	●	●	●	●	●	●	●	Rubber contacts Keytop types available
Unit key	Unit key	R-8000	●	●	●	●	●	●	●	●	●	●	●	
		R-22						●	●	●	●	●	●	With keytops
		WR-70						●	●	●	●	●	●	Rocker types
		M-6000	●	●	●	●	●	●	●	●	●	●	●	Metal contacts Keytop types available Vertical types Waterproof types
		MV-6000	●	●	●	●	●	●	●	●	●	●	●	
		MS-6000	●	●	●	●	●	●	●	●	●	●	●	
		MD						●	●	●	●	●	●	Ag/Au available
* Disc	* Disc	MDP						●	●	●	●	●	●	With keytop
		MDPL						●	●	●	●	●	●	Keytop types available
		DMB						●	●	●	●	●	●	LED types available
		TFD						●	●	●	●	●	●	With keytops
		SR (ST)						●	●	●	●	●	●	With keytops LED indicator types available
* Digitast	* Digitast	SER (SET)						●	●	●	●	●	●	
		REK						●	●	●	●	●	●	
		KSA	●	●	●	●	●	●	●	●	●	●	●	Waterproof types
		KSC	●	●	●	●	●	●	●	●	●	●	●	SMT
		KSF	●	●	●	●	●	●	●	●	●	●	●	Waterproof types
		K12						●	●	●	●	●	●	Round types
* DIP	* DIP	MSL						●	●	●	●	●	●	With keytops
		CDB						●	●	●	●	●	●	Waterproof types, Ag contacts

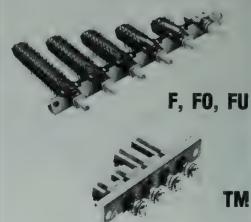
* KEY-BOARD S.W. (Disc/Digitast/Unity DIP Type); Available in Japan only.

* キーボードスイッチ(ディスク/デジタスト/ディップタイプ):日本国内向。

Switches スイッチ

Signal Switches 信号用スイッチ

Class	Type	Rating	Number	Contact Resist (mΩ)	Stroke (mm)	Terminal Pitch (mm)	Switch Timing			Operating Force (gf)	Life (cycles)	Chassis	Dimensions	
							Non-shorting	Shorting	Muting					
For Signal	Push Type	F	100V AC 0.5A 25V DC 1A	2, 4, 6 8, 10	6	4	●	●		2 Pole: 600	25,000	10 12.5 15 17.5 20	1 ~ 10	
		FO	40V DC 0.3A		50		●	●		2 Pole: 300				
		FU (AU Contact)	30V DC 0.1A	2, 4, 6 8, (10)	30		●			2 Pole: 600				
	TF for Sig. current	40V DC 0.3A	2, 4, 6		2.5		●	●	●	2 Pole: 250	10,000	10 12.5 15	10 ~ 10	
		TF for medium	25V DC 1A	2, 4			●	●	●	2 Pole: 170				
	Rocker Type	TM	30V DC 0.1A	2, 4	20	2	2.5	●	●	2 Pole: 170	30,000	10 12.5 15		
	Rocker Type	TPSU Au Contact	50V DC 0.1A	SPST SPDT	50	—	7.1			400	50,000	(W) (D) 19.4 x 12.9		



Power Switches 電源スイッチ

Class	Type	Rating	Number	Insulation Resistance (mΩ)	Stroke (mm)	Operating Force (gf)	Safety Standard Approval								Dielectric Test (V)	Dimensions			
							UL	C	S	D	V	S	B	S	N	E			
For Power	Push Type	NE15-DD NE15-DS NE15-RD NE15-RS	250V AC 4A	DPDT DPST SPDT SPST	1000	3.2	800	●	●	●	●	●	●	●	●	●	UL 1000	IEC 24	6,000
		TPS-10, -30 TPS-20 TPD-10, -30						●	●	●	●	●	●	●	●	●			
	Rocker Type	TPS-10, -30 TPS-20 TPD-10, -30	250V AC 3A 125V AC 5A	SPST SPDT DPST	500	—	400	●	●	●	●	●	●	●	●	●	IEC 2000	IEC 18	10,000
								●	●	●	△	●	●	●	●	●			

△ : Pending

Keyboard, DIP Switches (*2: Available in Japan, only) キーボードスイッチ・ディップスイッチ (*2 : 日本国内向)

Class	Contact	Type	Rating	Number of Poles	Contact Resist	Stroke (mm)	Dimensions (mm)			Operating Force (gf)	Life (cycles)	P.C.B. Mount Pitch (mm)	Remarks	Dimensions						
							W	D	H											
Keyboard Switch	Unit Key	Rubber	R-7000	6V DC 10mA	1 x 1	1kΩ	7	7	7, 10	90	1 x 10 ⁵	5.5	Available with keytop	R-7000						
			R-8000	15V DC 5mA	1 x 2		8	8	12	180		10								
			R-22	30V DC 5A			12.6	12.6	10.3	70		11.35								
			WR-70	6V DC 10mA	1 x 2		22	10.6	13.8	160		13 x 5.5								
	Metallic	M-6000	12V DC 50mA	1 x 1	10mΩ	0.25	6	6	4.3 5.7 9.5	100	(11.36)	4.5 x 6.5	Rocker type With key top H=7.3mm Plunger: Square							
		MV-6000					7	6.3	6	160		(4.5)								
	*2 Disc	MS-6000					0.35	6.2	7	4.8		7.62 x 5.08			M-6000 MDP SER					
		Ag	100V DC Ag 100mA Au 50mA	1 x 1	Ag Cont. 10mΩ	0.6	12.7	12.7	5	240										
		MD							Ag 1 x 10 ⁴ Au 5 x 10 ⁴											
		Au							Au/Ag 1 x 10 ³											
		Ag				Au Cont. 15mΩ	0.6	12.6	19.1	8.5	200	Ag 2 x 10 ³ Au 2 x 10 ⁴								
		MDP					1	15	19.8	10.5	180									
		Au					1.5	18	18	21.8	150									
	*2 Digitast	SR (ST)	24V DC 10mA	1 x 2	50mΩ	2	12.3 (17.3)	17.1	13.8 14.3	150	Au 1 x 10 ⁴	5.08 x 7.62	With keytop: LED also available							
		SER (SET)	25V DC 10mA	1 x 1	150mΩ	1.5	12.5	14	9.5	130	Au 2 x 10 ⁵	2.508 x 10.2								
		REK	25V DC 10mA	1 x 1	150mΩ	1.5	12.5	14	9.5	130	Au 2 x 10 ⁵	2.508 x 10.2								
		KSA	50V DC 50mA	1 x 1	50mΩ	0.3	7.4	7.4	4.8	130	3 x 10 ⁵									
		KSC				0.3	6.2	6.2	2.7	160	1 x 10 ⁵									
		KSF				0.3	7.4	7.4	2.6	160	3 x 10 ⁵									
		MSL				1.5	12.5	14.3	9.7	220	1 x 10 ⁶									
	*2 Unit Key	Au	K12	28V DC 100mA	1 x 1	50mΩ	2	φ12	11	250	1 x 10 ⁵									
		Ag	CDB-G	50V DC 200mA	2 ~ 10 x 1	(50°)	7.7	6.62 ~ 26.64	11	150	Ag 2 x 10 ³	2.54 x 9	Waterproof type: Ag contacts							
		Ag	CDB-L				8	6.58	150	200										
		Ag	CDB-V				8	6.58	200											

Polyvaricons: General Specifications ポリバリコン一般仕様

16mm Square Polyvaricons

Use	Type No.	No. of Sections	Capacitance, max. (pF)	Tolerance	Capacitance, min. (pF)	Trimmer (pF)	Cap. Coef. see curves	Torque (g · cm)	Dimensions, W x L x H, (mm)
FM/AM	HP-22125-R 	AM-2 FM-2	(OSC 82 ANT 160 20 or (40))	$\pm (2pF+2\%)$ $\pm 1pF$	5.0 5.5 ± 1 4.7 5.4 ± 1	8 ± 3	1b 1a 4c	30 ~ 250	16 x 16 x 5.7
	HD-22125/HD-22125-R 	AM-2 FM-2	(OSC 82 ANT 160 20)	$\pm (1pF+2\%)$ $\pm (0.4pF+2\%)$	5.4 5.1 ± 1 4.3 4.7 ± 1	8 ± 3	1b 1a 4c	30 ~ 250	16.4 x 16.4 x 8
	HD-22124/HD-22124-R 	AM-2 FM-2	(OSC 82 ANT 140 20)	$\pm (1pF+2\%)$ $\pm (0.4pF+2\%)$	5.5 5.4 ± 1 4.5 4.7 ± 1	8 ± 3	1b 1a 4c	30 ~ 250	16.4 x 16.4 x 8
	HU-22125/HU-22125-R 	AM-2 FM-2	(OSC 82 ANT 160 20 or (40))	$\pm (1pF+2\%)$ $\pm (0.4pF+2\%)$	4.5 4.1 ± 1 3.7 3.9 ± 1	8 ± 3	1b 1a 4c	20 ~ 250	16.4 x 16.4 x 9 Rear mtg H: 9.2
	HU-22124/HU-22124-R 	AM-2 FM-2	(OSC 82 ANT 140 20 or (40))	$\pm (1pF+2\%)$ $\pm (0.4pF+2\%)$	4.2 4.3 ± 1 4.0 4.3 ± 1	8 ± 3	1b 1a 4c	30 ~ 250	16.4 x 16.4 x 9 Rear mtg H: 9.2
	HU-201/HU-201-R 	FM	FM-2	20 or (40)	$\pm (0.4pF+2\%)$	3.0 3.3 ± 1	8 ± 3 4c	30 ~ 250	16.4 x 16.4 x 6.3 Rear mtg H: 6.5

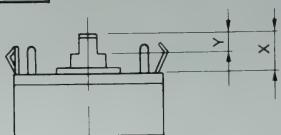
20mm Square Polyvaricons

FM/AM	SE-22125 	AM-2 FM-2	(OSC 82 ANT 160 20 or (40))	$\pm (1pF+1\%)$ $\pm 0.5pF$	4.2 ± 1 4.0 ± 1	8 ± 3	1b 1a 4c	200 ± 150	21 x 21 x 20
	SE-22124 	AM-2 FM-2	(OSC 82 ANT 140 20 or (40))	$\pm (1pF+1\%)$ $\pm 0.5pF$	3.8 ± 1 3.7 ± 1	8 ± 3	1b 1a 4c	200 ± 150	21 x 21 x 20
	FE-22125/FE-22125-R 	AM-2 FM-2	(OSC 82 ANT 160 20 or (40))	$\pm (1pF+1\%)$ $\pm 0.5pF$	4.2 ± 1 4.0 ± 1	8 ± 3	1b 1a 4c	200 ± 150	21 x 21 x 17 Rear mtg H: 18.5
	FE-22124/FE-22124-R 	AM-2 FM-2	(OSC 82 ANT 140 20 or (40))	$\pm (1pF+1\%)$ $\pm 0.5pF$	3.8 ± 1 3.7 ± 1	8 ± 3	1b 1a 4c	200 ± 150	21 x 21 x 17 Rear mtg. H: 18.5
	ST-2217 	AM-2 FM-2	335 20 or (40)	$\pm (1pH+1\%)$ $\pm 0.5pF$	5.0 4.7 ± 1 4.4 4.7 ± 1	8 ± 3	1a 4c	200 ± 150	21 x 21 x 23.5
	FT-2217/FT-2217-R 	AM-2 FM-2	335 20 or (40)	$\pm (1pF+1\%)$ $\pm 0.5pF$	5.0 ± 1.5 4.7 ± 1	8 ± 3	1a 4c	200 ± 150	21 x 21 x 20.5 Rear mtg H: 22.0

FM/AM Multi band

Standard Type List 標準タイプリスト

AM / FM Multi-band	No. of Stage	Capacitance max. (pF) (最大可変容量)			AM FM
		ANT	140	160	
		OSC	82	82	
		HU-22124 HD-22124 FE-22124 SE-22124	HU-22125 HD-22125 FE-22125 SE-22125	FT-2217 ST-2217	Capacitance max. 20 or 40 (pF)
FM	2	2	HU-22124 HD-22124 FE-22124 SE-22124	HU-22125 HD-22125 FE-22125 SE-22125	ANT 20 or 40
				OSC	20 or 40
	2				HU-201



● Standard Length of shaft

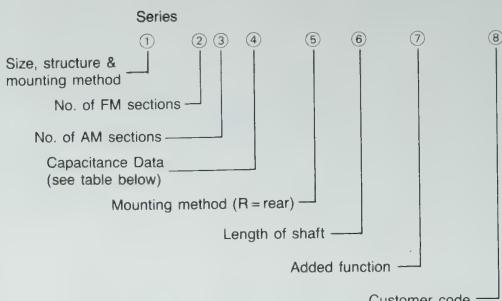
(標準シャフト長さ) (unit: mm)

Mountnt	20mm Type	16mm Type
	FE, FT	HU, HS
Self Rear	N (4/2) M (6/3) L (10/6)	H (2/1.5) S (2.5/2) K (4/3) N (4/2) *2M (1/0.8)
Dip	SE, ST	—
	S (3/3)	—

Note: *2M Shaft is effective for HP-22125 type only

Product Coding Example:

FE- 22124- R N 0 0 0 - 0



① : Series	Ext. Dim. (mm)	Dielectric		Mounting Method		
		Laminated	Poly-film	Dipping	Self-Supporting	Rear Mounting
SE	20	○		○		
FE	20	○			○	-R (5)
ST	20		○	○		
FT	20		○		○	-R (5)
HD	16		○		○	-R (5)
HU	16		○		○	-R (5)
HP	16	○				-R (5)

Capacitance Characteristics

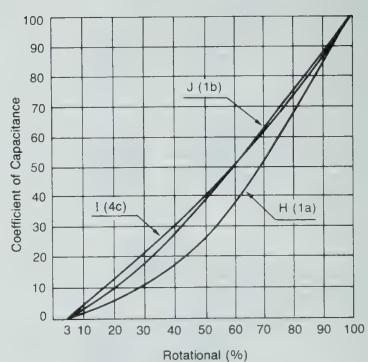
Symbol	1	2	3	4	5	6	7	A
Capacitance, pF	20	82	—	140	160	—	335	40

Note: Typical characteristics are given. When ordering, please confirm.

Index %	100	90	80	75	70	60	50	40	30	25	20	10	3
1a	100.00	84.40	67.90	60.00	52.30	38.00	26.20	17.00	10.20	7.57	5.31	1.74	0.00
1b	100.00	90.00	78.10	71.80	65.20	51.70	38.80	27.20	17.40	13.30	9.60	3.30	0.00
4c	100.00	86.18	73.37	67.32	61.48	50.42	40.12	30.50	21.52	17.25	13.11	5.23	0.00

Note: EIAJ equivalents, H=1a, I=4c, J=1b

Capacitance Curves



Single Output Switching Power Supplies for Mounting in Equipment

単一出力 スイッチング電源 用途別一覧

Multi-Output Switching Power Supplies for Mounting in Equipment

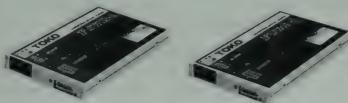
多出力 スイッチング電源 用途別一覧

Switching Power Supplies (For Mounting in Equipment) スイッチングパワーサプライ(機器組込型電源)

FS7R5 & FU7R5 Series (7.5W)

Standard Single Output

UL1950 Approved (FS7R5 Type)

W: 1/2inch
on card

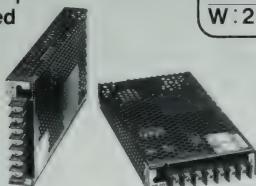
Features

- Slender body: Thickness of half an inch (12.7mm) makes this power supply only half as thick as its predecessor.
- Mounting versatility: Can be mounted vertically, horizontally, or on card.
- Compact: Volume of 0.1 liter is only 48% that of the previous model.

FS100 Series (100W)

Standard Single Output

UL478 Approved

0.42 l
W: 25mm

Features

- Low-profile: 25mm thickness makes it just half the size of our previous model.
- Compact: 0.421 volume is 42% that of its predecessor.
- High frequency design: Switching frequency of 430kHz.

PE Series (30, 50, 100W)

Standard Single Output 100V/200V AC (Selector provided)



Safety standards: VDE0806

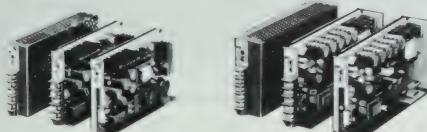


SERIES

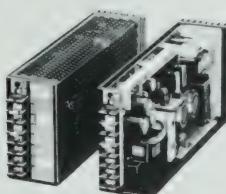
PE30



PE50



PE100



Features

- Adapted for line voltage at 100V or 200V systems (selector provided).
- Choice of variation in structure
Open frame or with case.
Barrier strip terminals, connectors or other forms on order.
- Safety standard VDE0806
- Noise: conforms with FCC and CISPR requirements.
- Series operation is possible.

特長

- 厚さ1/2インチ(12.7mm)の薄形電源。
- 実装自由: タテ置き、ヨコ置き、オンカード実装可。
- 小形: 体積0.1lは、従来品の48%。(当社比)

Input Voltage: FS7R5 85~132V AC
FU7R5 170~264V AC

Model		Rated Power (W)	Rated Voltage (V)	Rated Current (A)	Over-Voltage Protection <(V)	Dimensions H x L x W (mm) Wt: F Type (g)
100V AC	200V AC					
FS7R5-05	FU7R5-05	7.5	5	1.5	6.9	70 x 120 x 12.7 (160g)
FS7R5-06	FU7R5-06	7.5	6	1.25	8.0	
FS7R5-12	FU7R5-12	7.56	12	0.63	15.5	
FS7R5-15	FU7R5-15	7.5	15	0.5	20.0	
FS7R5-18	FU7R5-18	7.56	18	0.42	24.0	
FS7R5-24	FU7R5-24	7.68	24	0.32	31.0	

特長

- 薄形: 厚さ25mmは従来品の1/2(当社比)
- 小形: 体積0.42lは、従来品の42%(当社比)
- 高周波設計: スイッチング周波数430kHz

Input Voltage: 85~132V AC

Model	Rated Power (W)	Rated Voltage (V)	Rated Current (A)	Over-Voltage Protection <(V)	Dimensions H x L x W (mm) Wt: F Type (g)
FS100-05	100.0	5	20.0	6.9	97 x 175 x 25 (600g)
FS100-12	99.6	12	8.3	15.5	
FS100-15	99.0	15	6.6	20.0	
FS100-18	100.8	18	5.6	24.0	
FS100-24	100.8	24	4.2	31.0	

特長

- フロアなし入力電圧(AC100V系/AC200V系)切替行
- 構造: フロアレス・エーショーン・オープンフレーム、ケース等
入出力端子は端子台、コネクタ等の対応も可能
- 安全規格: VDE0806認定品
- 電音規格: FCC、CISPR 対応設計
- 直列運動可能

Input Voltage: 85~132V/170~264V AC
(selector provided)

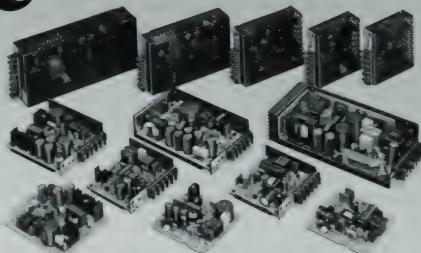
Type	Model	Rated Power (W)	Rated Voltage (V)	Rated Current (A)	Over-Voltage Protection <(V)	Dimensions H x L x W (mm) Wt: F Type (g)
PE30 2830	PE 30-05	27.5	5	5.5	6.9	97 x 160 x 35 (440g)
	PE 30-06	30.0	6	5.0	8.0	
	PE 30-12	30.0	12	2.5	15.5	
	PE 30-15	30.0	15	2.0	20.0	
	PE 30-18	30.6	18	1.7	24.0	
	PE 30-24	31.2	24	1.3	31.0	
PE50 2831	PE 50-05	50.0	5	10.0	6.9	97 x 180 x 41 (500g)
	PE 50-06	50.4	6	8.4	8.0	
	PE 50-12	50.4	12	4.2	15.5	
	PE 50-15	51.0	15	3.4	20.0	
	PE 50-18	50.4	18	2.8	24.0	
	PE 50-24	50.4	24	2.1	31.0	
PE100 2832	PE100-05	100.0	5	20.0	6.9	97 x 230 x 50 (950g)
	PE100-06	99.6	6	16.6	8.0	
	PE100-12	99.6	12	8.3	15.5	
	PE100-15	99.0	15	6.6	20.0	
	PE100-18	100.8	18	5.6	24.0	
	PE100-24	100.8	24	4.2	31.0	

PS & PU Series (10,15, 30, 50, 100W)

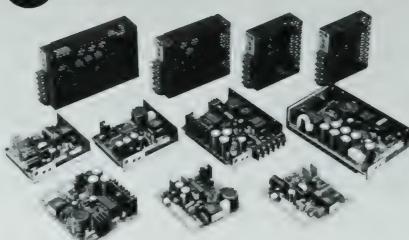
Standard Single Output

UL478 Approved (PS Type)

PS SERIES



PU SERIES



Features

- Thin and compact; low cost.
- Designed for superior cost performance.
- Wide choice for specific requirements.
- High quality and high reliability built-in to meet international safety standards.
- Safety Standards: UL478 acquired; also conforms to CSA.
- Designed to comply with FCC and CISPR noise standards.
- Series operation is possible.

MK & MU Series (150W)

Standard Single Output

UL478 Approved (MK Type)

MK.MU SERIES



MK Series



MU Series

Features

- Small in Size—only 97(H) x 171(D) x 59(W)mm, or less than a liter in volume.
- Power type MOS-FET used at high frequency for high conversion efficiency, 80% typical.
- Immunity Characteristics: Lightning surge, 4kV; field strength, 50V/m

特長

- 小形、薄形、低価格
- コストパフォーマンスを究めた設計
- 使う立場に立ったワイドバリエーション
- 國際安全規格で磨かれた高品質、高信頼性
- 安全規格(電取、CSA)対応設計
- UL478取得(PS Type)
- 雑音規格(FCC、CISPR)対応設計
- 直列運転可能

Input Voltage: PS 85~132V AC, 110~175V DC
PU 170~264V AC, 220~350V DC

Model		Rated Power (W)	Rated Voltage (V)	Rated Current (A)	Over-Voltage Protection <(V)	Dimensions H x L x W (mm) Wt: F Type (g)
100V AC	200V AC					
PS 10-05	PU 10-05	10.0	5	2.0		
PS 10-06	PU 10-06	10.2	6	1.7		
PS 10-12	PU 10-12	10.8	12	0.9		
PS 10-15	PU 10-15	10.5	15	0.7		
PS 10-18	PU 10-18	10.8	18	0.6		
PS 10-24	PU 10-24	12.0	24	0.5		
PS 15-05	PU 15-05	15.0	5	3.0		
PS 15-06	PU 15-06	15.0	6	2.5		
PS 15-12	PU 15-12	15.6	12	1.3		
PS 15-15	PU 15-15	15.0	15	1.0		
PS 15-18	PU 15-18	15.2	18	0.9		
PS 15-24	PU 15-24	16.8	24	0.7		
PS 30-05	PU 30-05	27.5	5	5.5	6.9	
PS 30-06	PU 30-06	28.2	6	4.7	8.0	
PS 30-12	PU 30-12	30.0	12	2.5	15.5	
PS 30-15	PU 30-15	30.0	15	2.0	20.0	
PS 30-18	PU 30-18	30.6	18	1.7	24.0	
PS 30-24	PU 30-24	31.2	24	1.3	31.0	
PS 50-05	PU 50-05	50.0	5	10.0	6.9	
PS 50-06	PU 50-06	50.4	6	8.4	8.0	
PS 50-12	PU 50-12	50.4	12	4.2	15.5	
PS 50-15	PU 50-15	51.0	15	3.4	20.0	
PS 50-18	PU 50-18	50.4	18	2.8	24.0	
PS 50-24	PU 50-24	50.4	24	2.1	31.0	
PS100-05		100.0	5	20.0	6.9	
PS100-06		99.6	6	16.6	8.0	
PS100-12		99.6	12	8.3	15.5	
PS100-15		99.0	15	6.6	20.0	
PS100-18		100.8	18	5.6	24.0	
PS100-24		100.8	24	4.2	31.0	

100W=PS Type only

特長

- 小形97(H) x 171(D) x 59(W)mm, 1リットル以下は業界最軽
- ハーフ-MOS-FETを採用、高周波化をはかり、高効率化(効率80% Typ.)を実現
- イミニュテイ耐雷サージ: 4kV、耐強電界: 50V/m

Input Voltage: MK 90~132V AC, 120~175V DC
MU 180~264V AC, 240~350V DC

Model		Rated Power (W)	Rated Voltage (V)	Rated Current (A)	Over-Voltage protection <(V)	Dimensions H x L x W (mm) Wt: F Type (g)
100V AC	200V AC					
MK150-05	MU150-05	150.0	5	30.0	6.9	
MK150-06	MU150-06	150.0	6	25.0	8.0	
MK150-12	MU150-12	150.0	12	12.5	15.5	
MK150-15	MU150-15	150.0	15	10.0	20.0	
MK150-18	MU150-18	151.2	18	8.4	24.0	
MK150-24	MU150-24	151.2	24	6.3	31.0	

97 x 171 x
59
(1,000g)

FT7R5 & FM7R5 Series (7.5W)

Standard Triple Output

UL1950 Approved (FT7R5 Type)

W: 1/2 inch
on card



Features

- Slender body: Thickness of half an inch (12.7mm) makes this power supply only half as thick as its predecessor.
- Compact: Volume of 0.1 liter is only 48% that of the previous model.
- Mounting versatility: Can be mounted vertically, horizontally, or on card.

特長

- 厚さ1/2インチ(12.7mm)の薄形電源
- 小形: 体積0.1Lは、従来品の48% (当社比)
- 実装自由: タテ置き、ヨコ置き、オンカード実装可

Specifications

Input Voltage: FT7R5 85~132V AC FM7R5 170~264V AC

Output Power (W)	Model		Output Voltage (V) and Current (A)			Dimensions H x L x W (mm) Wt: F Type (g)
	100V AC	200V AC	CH1 (V1)	CH2 (V2)	CH3 (V3)	
7.5	FT7R5-01	FM7R5-01	+5V · 1A	+12V · 0.1A	-12V · 0.1A	70 x 120 x 12.7 (160g)
	FT7R5-11	FM7R5-11	+5V · 1A	+15V · 0.1A	-15V · 0.1A	
	FT7R5-21	FM7R5-21	+5V · 1A	+12V · 0.1A	-5V · 0.1A	

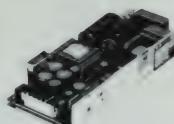
MW Series (17.5, 31, 51, 100W) Standard Worldwide input, Thin multi output

UL Approved

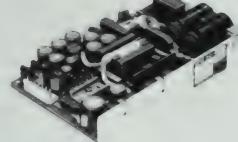
MW SERIES



MW15



MW30



MW50



MW100

Features

- Optimum flexibility output (Flex power method)
- Thin and compact (MW15, 30, 50, 25.4mm thick; MW100, 40mm thick)
- Designed to withstand voltage to 3,750V AC

特長

- フレキシビリティに富むマルチ出力方式、スリムパワーワーク
- 小型、薄型 (MW15, 30, 50は厚さ25.4mm、MW100は厚さ40mm)
- 断圧 3,750V AC耐震設計

Specifications

Input Voltage (V)	Total Power (W)	Model	Output Voltage (V) and Current (A)				Dimensions (mm)		
			V1	V2	V3	V4	H	D	W
85~264V AC	17.5	MW15-01	+ 5V/3A	+ 12V/0.5A	-12V/0.5A	—	60	110	25.4
		MW15-11	+ 5V/3A	+ 15V/0.5A	-15V/0.5A	—			
	31	MW30-01	+ 5V/5A	+ 12V/1.2A	-12V/0.5A	—	60	150	25.4
		MW30-11	+ 5V/5A	+ 15V/1.2A	-15V/0.5A	—			
85~132V AC 170~264V AC	51	MW50-01	+ 5V/8A	+ 12V/1.5A	-12V/1A	—	95	155	25.4
		MW50-11	+ 5V/8A	+ 15V/1.5A	-15V/1A	—			
	100	MW50-21	+ 5V/8A	+ 12V/1.5A	-5V/1A	—	120	210	40
		MW100-01	+ 5V/12A	+ 24V/2A	+ 12V/2A	-12V/1A			
		MW100-02	+ 5V/12A	+ 12V/2A	+ 12V/2A	-12V/1A			
		MW100-03	+ 5V/12A	+ 12V/2A	-12V/2A	—			
		MW100-04	+ 24V/3A	+ 12V/2A	+ 5V/2A	-12V/1A			

• Flex power system may be used up to the max. power per channel but not to exceed the total power.

• フレックスマルチ方式: 出力電力は各チャンネルの最大電力範囲内で使用できますが全定格出力を超えないこと

Example MW15-01 + 5V/3A (15W) + 12V/0.5A (6W) -12V/0.5A (6W) Total output 17.5W

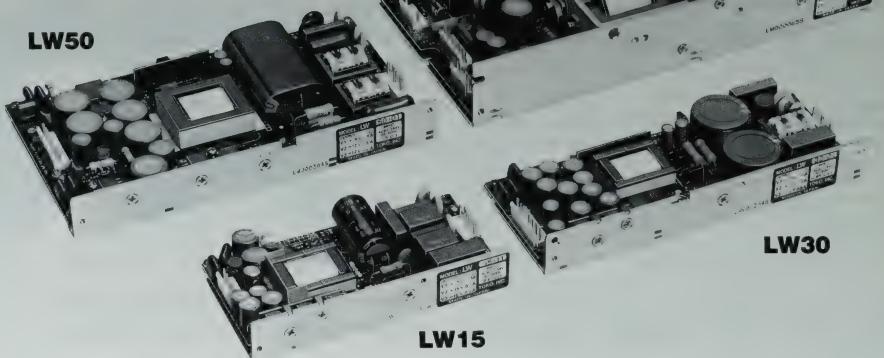
Usage example: 1. + 5V/2A (10W) + 12V/0.3A (3.6W) -12V/0.2A (2.4W) Total output 16W
2. + 5V/1A (5W) + 12V/0.5A (6W) -12V/0.5A (6W) Total output 17W

LW Series (17.5, 31, 51, 100W) Standard Worldwide input, Thin multi output



LW SERIES

LW50



LW100

LW30

LW15

Features

- 3 years Free Warranty
- More than 5 years Life (Full Load 40°C ambient temp)
- Low Profile
 - LW15, 30, 50: 25.4mm (1 inch)
 - LW100 : 40mm
- World Wide Input Voltage
 - LW15, 30, 50: 85~264V AC
 - LW100 : 85~132V AC/170~264V AC (Switchable)
- Flex Power method

Safety Standards

- UL1950 Approved
- CSA EB1402C Approved
- NE60 940 (IEC950) Approved
- Japanese Safety STD Comply with

EMI Regulations

- FCC Part 15 class A/B
- VDE0871 class A/B
- VCCI class I, II

Specifications

Input Voltage (V)	Total Power (W)	Model	Output Voltage (V) and Current (A)				Dimensions (mm)		
			V1	V2	V3	V4	H	D	W
85~264V AC	17.5	LW15-01	+ 5V/3A	+ 12V/0.5A	- 12V/0.5A	-	70	128	25.4
		LW15-11	+ 5V/3A	+ 15V/0.5A	- 15V/0.5A	-			
	31	LW30-01	+ 5V/5A	+ 12V/1.2A	- 12V/0.5A	-	70	175	25.4
		LW30-11	+ 5V/5A	+ 15V/1.2A	- 15V/0.5A	-			
	51	LW50-01	+ 5V/8A	+ 12V/1.5A	- 12V/1A	-	110	190	25.4
		LW50-11	+ 5V/8A	+ 15V/1.5A	- 15V/1A	-			
85~132V AC 170~264V AC	100	LW50-21	+ 5V/8A	+ 12V/1.5A	- 5V/1A	-	120	244	40
		LW100-01	+ 5V/12A	+ 24V/2A	+ 12V/2A	- 12V/1A			
		LW100-02	+ 5V/12A	+ 12V/2A	+ 12V/2A	- 12V/1A			
		LW100-03	+ 5V/12A	+ 12V/2A	- 12V/2A	-			
	LW100-04		+ 24V/ 3A	+ 12V/2A	+ 5V/2A	- 12V/1A			

* Flex power system may be used up to the max. power per channel but not to exceed the total power.

() Flex power system may be used up to the max. power per channel but not to exceed the total power.

Example: LW15-01 + 5V/3A (15W) + 12V/0.5A (6W) - 12V/0.5A (6W) Total output 17.5W

Usage example: 1. + 5V/2A (10W) + 12V/0.3A (3.6W) - 12V/0.2A (2.4W) Total output 16W

2. + 5V/1A (5W) + 12V/0.5A (6W) - 12V/0.5A (6W) Total output 17W

ET and EM Series (10, 15W)

Triple Output, economical design and small space requirement

ET & EM SERIES



ET10



ET15



EM10



EM15

Features

- Toko's original circuitry used for economy and ease in operation.
- Printed board and connectors used for minimizing size and weight.
- Low noise characteristics—conforms to FCC Class B regulations.

特長

- 独自回路方式により経済的効果と使いやすさを追求した低ノイズ電源。
- 軽量、小型、プリント基板、コネクタ構造
- 低ノイズ(基板タイプでFCCクラスBをクリア)

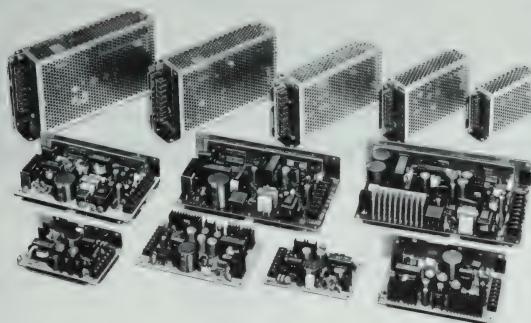
Specifications Input Voltage: ET 85 ~ 132V AC, EM 170 ~ 264V AC

Output Power (W)	Model		Output Voltage (V) and Current (A)			Dimensions H x D x W (mm) (Unit in grams)
	100V AC	200V AC	CH1 (V1)	CH2 (V2)	CH3 (V3)	
10	ET10-01	EM10-01	+5V · 1A	+12V · 0.3A	-12V · 0.1A	65 x 112 x 32 (100)
	ET10-11	EM10-11	+5V · 1A	+15V · 0.3A	-15V · 0.1A	
	ET10-21	EM10-21	+5V · 1A	+12V · 0.3A	-5V · 0.1A	
15	ET15-01	EM15-01	+5V · 2A	+12V · 0.3A	-12V · 0.2A	78 x 125 x 35 (120)
	ET15-11	EM15-11	+5V · 2A	+15V · 0.3A	-15V · 0.2A	
	ET15-21	EM15-21	+5V · 2A	+12V · 0.3A	-5V · 0.2A	

PT Series (15, 30, 50, 75 100W) Standard Triple Output

UL478 Approved

PT SERIES



Features

- Suitable models available for various applications.
- High performance design at low cost.
- Wide range in selection of structures.
- Wide input voltage range, 85 to 132V AC.
- Designed to meet safety regulations of CSA.
- Designed to meet noise regulations of FCC and CISPR.
- UL478 approved.
- Series operation is possible.

特長

- 多用途に適合する豊富な品揃え
- コストパフォーマンスに優れた設計
- 選択容易で自在な構造バリエーション
- 広範囲な入力電圧
- 安全規格(電取、CSA)対応設計
- UL478認定品
- 雑音規格(FCC、CISPR)対応設計

Specifications

Input Voltage (V)	Output Power (W)	Model	Output Voltage (V) and Current (A)			Dimensions (mm)			Remarks
			V1	V2	V3	H	D	W	
85 ~ 132V AC	15	PT 15-01	+5V/2A	+12V/0.3A	-12V/0.2A	81	127.5	38	V2, V3 Practically regulated
		PT 15-02	+5V/2A	+12V/0.3A	-12V/0.2A				
		PT 15-11	+5V/2A	+15V/0.2A	-15V/0.2A				
		PT 15-21	+5V/2A	+12V/0.3A	-5V/0.2A				
	30	PT 30-01	+5V/3A	+12V/1A	-12V/0.3A	100	164.5	45	V2, V3 Practically regulated
		PT 30-02	+5V/3A	+12V/1A	-12V/0.3A				
		PT 30-11	+5V/3A	+15V/0.7A	-15V/0.3A				
		PT 30-21	+5V/3A	+12V/1A	-5V/0.3A				
90 ~ 132V AC	50	PT 50-01	+5V/5A	+12V/1A	-12V/1A	112.5	198	50	V2, V3 Practically regulated
		PT 50-02	+5V/5A	+12V/1A	-12V/1A				
		PT 50-03	+5V/6A	+12V/1.2A	-12V/0.3A				
	75	PT 75-01	+5V/10A	+12V/1A	-12V/1A	126.5	225	55	V2, V3 Practically regulated
		PT 75-02	+5V/10A	+12V/1A	-12V/1A				
		PT 75-03	+5V/12A	+12V/0.5A	-12V/0.5A				
		PT 75-04	+5V/9A	+12V/2A	-12V/0.5A				
	100	PT 75-11	+5V/9A	+15V/1A	-15V/1A	142	248	55	V2, V3 Practically regulated
		PT100-01	+5V/12A	+12V/3A	-12V/0.5A				
		PT100-02	+5V/12A	+12V/3A	-12V/0.5A				

Hybrid IC · Module Applications ハイブリッド IC・モジュール 用途別一覧

Item Name		Application		Audio Equip.	Video Equip.	Communications Equip.	Industrial Equip.														
							Audio	Car Audio	Television Receivers	Video Cassette Recorders (VTR)	Integrated Video Cameras	Electronic Still Cameras	Wire Telecommunication Equipment	Wireless Telecommunication Equipment	OA Equipment	Electronic Computers/Data Equipment	FDDI/HDD	Printers	Displays	Electric Measurement Instruments	NC Instruments
Modules	Telecommunication Modules												●								
	Active Filters			●	●							●	●								
	AM RF Modules			●																	
	TOKEN RING LAN Interface Modules														●						
DC DC Converters	CPS 1000 Series			●	●		●				●	●	●				●	●	●		
	CPS 5000 Series			●	●		●				●	●	●				●	●	●		
	CPS 6000 Series			●	●		●				●	●	●				●	●	●		
	FMK Series										●	●	●			●	●	●	●	●	
	E Series										●	●	●			●	●	●	●	●	

Modules for Mobile Communications Equipment 携帯無線機用モジュール

Variable Band Pass Filter for VHF



TMX240

Features

- For hand held radio equipment
- RF band pass filter for VHF by electronic tuning
- The filter structure is 2 pole, I/O impedance 50Ω with image trap.
- Miniature size (2.7cc)

特長

- ハンディ無線用
- 電子同調方式のVHF帯RFバンドバスフィルタ
- イメージトランプ付2ポール、入出力インピーダンス50Ωのフィルタ構成
- 超小形2.7cc

Specifications

Item	Characteristics
Tuning Frequency	150 ~ 174MHz
Tuning Voltage	0.5 ~ 4.5VDC
Input Impedance	50Ω
Output Impedance	50Ω
Operating Temperature Range	-30 ~ +60°C

Front end module for radio communications equipment



VHF: TMX314, -316, -324

UHF: TMX258, -302, -304, -305

Specified Small Power Radio: TMX431, -448

Features

- Each module is composed of RF input circuit, amplifier for oscillator, and a mixer circuit.
- Miniature size (3.3cc)

特長

- 受信部のRF回路、OSC部のAMP、MIXER回路をコンパクトに一括。
- 超小形 3.3cc

Specifications

Item No.	Reception frequency MHz	Item No.	Reception frequency MHz
TMX324	132 ~ 150	TMX304	470 ~ 490
TMX314	150 ~ 162	TMX305	490 ~ 512
TMX316	162 ~ 174	TMX448	405 ~ 440
TMX302	400 ~ 420	TMX431	435 ~ 470
TMX258	450 ~ 470		

Front end module for MCA (trunking) radio



THX460

Features

- Each module is composed of RF input circuit, and amplifier for oscillator, and a mixer circuit.
- Miniature size (4.7cc)

IF amplifier module



TMX235

Features

- Each module contains 1st IF amplifier, 2nd IF amplifier, detector circuit, and noise squelch.
- Low voltage, low current operation
- Miniature size (4.3cc)

IF Amplifier Module



Cellular Telephone : TMX-365
Specified Small Power Radio: TMX-450

Features

- Each module contains 2nd mixer, 2nd IF amplifier
- Miniature size (3.0cc)

IF Amplifier Module



TMX-322

Features

- Each module contains 2nd IF amplifier, detector circuit, and noise squelch.
- Miniature size (5.4cc)

TX Pre-Driver Module



THX-405

Features

- Equipped with OSC and TX output
- Miniature size (1.3 cc)

特長

- 受信部のRF回路、OSC部のAMP、MIXER回路
第1IFフィルタ部をコンパクトに一括。
- 超小形 4.7cc。

Specifications

Item	Standard	Conditions
Tuning Frequency	851 ~ 870MHz	
RF Input Impedance	50Ω	
OSC Input Impedance	50Ω	
Intermediate Frequency	45.1MHz	
Sensitivity (12dB SINAD)	-12dB _μ max.	1kHz±3kHz dev. fo±9.5MHz
Current Consumption	9mA max.	No signal

特長

- 第1IF増幅、第2IF増幅、検波およびノイズスケルチを内蔵。
- 低電圧・低電流動作が可能
- 超小形 4.3cc。

Specifications

Item	Standard	Conditions
1st. IF	21.4MHz	
2nd. IF	455kHz	
Input Impedance	1.5kΩ	
AF Output Impedance	10kΩ	
Sensitivity (20dB SINAD)	0.5μV max.	1kHz±3kHz dev.
Current Consumption	9mA max.	No signal

特長

- 第2ミキサ、第2IF増幅回路を内蔵。
- 超小形 3.0cc。

Specifications

Item	TMX365	TMX450	Conditions
Operating Voltage	4.0 ~ 9.5V (DC)	4.5 ~ 6.3 (DC)	
1st. IF	45MHz	45MHz	
2nd. IF	455kHz	455kHz	
Input Impedance	50Ω	560Ω	
Sensitivity (12dB SINAD)	-113dB max.		1kHz±8kHz dev.
		-111dBm max.	1kHz±1.5kHz dev.
Current Consumption	8.0mA max.	7.5mA max.	No signal

特長

- 第1IF増幅、第2IF増幅、検波およびスケルチ機能を内蔵。
- 超小形 5.4cc。

Specifications

Item	Standard	Conditions
Operating Voltage	4.0 ~ 9.5V (DC)	
1st. IF	45.1MHz	
2nd. IF	455kHz	
Sensitivity (12dB SINAD)	-11.5dB max.	Zin=50Ω, 1kHz±3kHz dev.
Current Consumption	10mA max.	No signal

特長

- OSC出力、Tx出力を備える回路構成。
- 超小形 1.3cc。

Specifications

Item	Standard
Frequency Range (OSC OUT)	806 ~ 825MHz
Frequency Range (Tx OUT)	806 ~ 870MHz
Operating Voltage Vcc1	4.0 ~ 7.5V
Operating Voltage Vcc2	0 ~ 5.2V
Operating Voltage Vcc3	6.7 ~ 7.5V
Input Impedance	50Ω
Output Impedance	50Ω

PLL Frequency Synthesizer Module



VHF: TMX-268
UHF: TMX-249

Features

- For hand held radio equipment
- The circuit structure includes a frequency synthesizer and a dual modulus prescaler
- Miniature size (3.1 cc)

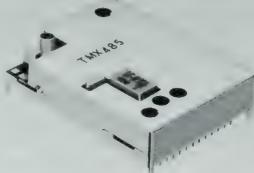
特長

- ハンディ無線用
- 周波数シンセサイザとデュアルモジュラス
プリスケーラを内蔵の回路構成。
- 超小形 3.1cc。

Specifications

TMX268 (VHF)	Transmission (400 ch)	Reception (400 ch)
Low Band	136~148MHz	157.4~159.4MHz
Medium Band	150~162MHz	171.4~183.4MHz
High Band	162~174MHz	183.4~195.4MHz
TMX249 (UHF)	Transmission (800 ch)	Reception (800 ch)
Low Band	400~420MHz	421.4~441.4MHz
Medium Band 1	450~470MHz	471.4~491.4MHz
Medium Band 2	470~490MHz	491.4~511.4MHz
High Band	490~510MHz	511.4~531.4MHz

Transceiver Unit 小電力コードレスホン用RFモジュール



HAND: TMX485
BASE: TMX486

特長

- 小形(23cc)、軽量(27g)
- 低電圧動作(ニッカド電池3本対応)
- 低消費電流(HAND待受50mA以下)

Features

- Miniature size (23cc).
- Low voltage operation (HAND SET).
- Low power consumption (HAND SET).
- Superior Adjacent channel rejection.

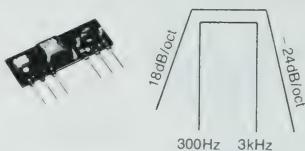
Specification

Item	TMX485 (HAND)	TMX486 (BASE)	Unit
TX Frequency Range	253.8625~254.9625	380.2125~381.3135	MHz
RX Frequency Range	380.2125~381.3125	253.8625~254.9625	MHz
Channel (at 12.5kHz)	89	89	CH
Supply Voltage	3.3~4.5	4.5~5.5	V
RX Current Consumption	50 Max.	65 Max.	mA
TX/RX Current Consumption	80 Max.	110 Max.	mA
Frequency Stability	3.8 Max.	3.8 Max.	PPM
TX Output Power	10	10	mW
TX Spurious Level	-46 Max	-46 Max	dBm
Carrier Sense Level	2 Max.	2 Max.	µV
ANT Leakage	-54 Max.	-54 Max.	dBm
Operating Temperature Range	0~50	0~50	°C
ANT Impedance	50	50	Ω

Active Filters for Cellular Telephones セルラーテレホン用アクティブフィルタ

Bandpass Filters

THB112A



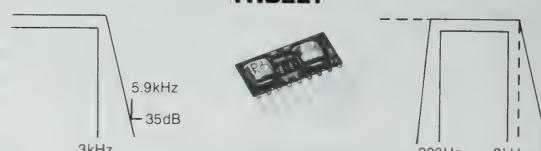
Lowpass Filters

THB127B



Combination Filter

THB227



Features

- Small size with low profile in SIP configuration.
- Operation with a single power source over a wide range of voltage.
- Low current consumption permits use in hand-held units.
- Use of the hybrid structure results in superior temperature characteristics.

特長

- 小形、低背のSIP形
- 単電源で動作電源、電圧範囲を広く使用可能
- 低消費電流でハンディタイプに最適。
- ハイブリッド構造による優れた温度特性。

Interface Module for TOKEN RING LAN トークンリングLAN用インターフェースモジュール

Includes Texas Instruments Chip Sets



THF 179

Description

The THF179 is a hybrid module developed for the interface of the TOKEN RING LAN. It is for use in the transmit-receive operation of data in accordance with IEEE STD. 802.5 (1985.).

概要

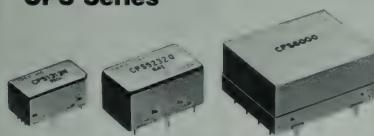
THF179はトークンリングLANのインターフェース用として開発したハイブリッドモジュール。IEEE802.5(1985)の標準に準拠したデータの送受信が可能

Specifications (Absolute Maximum Ratings)

Item	Symbol	Rating
Operating Temperature	T _a	0~+55°C
Storage Temperature	T _{stg}	-55~+125°C
Input Voltage	V _{in}	-0.5~+7V
Output Voltage	V _{out}	-0.5~+7V
Supply Voltage	V _{cc}	-0.5~+7V
Power Consumption	P _d	1.6W

DC-DC Converter Modules DC-DCコンバータモジュール

CPS Series



Features

A ceramic substrate is used to realize high output power and small overall size, all of which are important factors for space-saving in equipment.

特長

- けい光表示管のフィラメント電圧用
- バイアス電圧供給用
- 小形機器の電圧供給用

CPS1000 CPS5000 CPS6000

Electrical Characteristics

Item Symbol Series	Output Power Po	Output Voltage V _{o1} V _{o2}		Output Current I _{o1} I _{o2}		Output Current Range IoDC Max./Min.		Output Voltage Tolerance αDC		Input Voltage V _{IN}	Input Voltage Range V _{IN} Max./Min.	Conversion Efficiency η	Operating Temp Range Top	Storage Temp Range T _{Stg}
1000 1000-L 5000-L 5000-M series	1.2W Max.	-5~-40V or +5~-+40V	AC1~10Vrms	80mA Max.	120mA Max.	40~ 100%	60~ 100%	±10%	±25%	+1.7 ~30V	V _{IN} typ ±30%	≥55%	-20~ +65°C	-40~ +85°C
5000 series	2.4W Max.	-5~-40V or +5~-+40V	AC1~10Vrms	80mA Max.	120mA Max.	40~ 100%	60~ 100%	±10%	±25%	+1.7 ~30V	V _{IN} typ ±30%	≥55%	-20~ +65°C	-40~ +85°C
6000 series	6.0W Max.	-5~-40V or +5~-+40V	AC3~10Vrms	400mA Max.	500mA Max.	40~ 100%	60~ 100%	±10%	±30%	+4.5 ~30V	V _{IN} typ ±30%	≥70%	-20~ +85°C	-40~ +85°C

NOTE: V_{o1}; V_{IN} Max. + |V_{o1} Max. | ≤ 45V, V_{o2}; K·V_{IN} Max. + |V_{o2} Max. | ≤ 45V (K = Transformer winding ratio).

FMK Series (Non-floating Type)



Features

Optimum regulation (line/load). Highly reliable epoxy moulding.
Power: F: 0.25, M: 0.5, K: 1.0W

特長

- 独自の回路方式と独自の生産技術
- 高品質、高信赖性の産業用

E Series (Floating Type)



Features

Complete primary and secondary floating.
Built-in filters, reduced ripple and spike noise.
Power: 1.5W

特長

- 入力側と出力側を完全にフローティング (絶縁)
- 入出力側にフィルタを内蔵
- リップル、スパイクノイズが低い

Electrical Characteristics

Item Type	Input Voltage	Output Power	Output Voltage		Initial Setting	Line Regulation	Load Regulation	Temperature Coefficient
FMK	+5V ± 10%	0.25W 0.5W 1W	1-Channel Plus Voltage: +6V, +9V, +12V, +15V, etc 1-Channel Minus Voltage: -5V, -9V, -12V, -15V, etc 2-Channel Plus Minus Voltage: ±12V, ±15V, etc.	1-Channel: ±4% 2-Channel: ±5%	±0.4~±1.8%	0.6~5.0%	±0.1~±0.15%/°C	
E	5V ± 10% 12V ± 10% 24V ± 10%	1.5W	5V, 12V, 15V, 24V, ±12V, ±15V	1-Channel: ±5% 2-Channel: ±6%	±1.0%~±1.5%	±4.0%~±8.0%	0.1%/°C	

Delay Line and Pulse Transformer Applications ディレイライン・パルストラ ns 用途別一覧

Description	Package	Series	Application															
			Printer	FDD	HDD	Optical File Disk	Controller Computer	Personal Computer	Office Computer	General Purpose Computer	Fax/Simile	Word Processor	POS	Electronic Switch Board	Medical Instruments	I.C. Tester Measurement Instruments	Robot - NC machinery	Wireless Transmission Devices (including satellites)
Buffered Type Delay Lines (Active)	DIP	RHT	●	●	●	●	●	●					●	●	●	●		
		RZT	●	●	●	●	●	●					●	●	●	●		
	SIP	J ₁₀ ET	●	●	●	●	●	●					●	●	●	●	●	●
	SMD	RMT	●	●	●	●	●	●					●	●	●	●		
Passive Delay Lines	DIP	R ₂₀ ET	●	●	●	●	●	●					●	●	●	●		
		RET	●	●	●	●	●	●					●	●	●	●	●	●
		JAT	●	●	●	●	●	●					●	●	●	●	●	●
		RQT	●	●	●	●	●	●					●	●	●	●	●	●
	SIP	J ₁₀ D(T)		●									●	●	●	●	●	●
	SIP	JF(T)			●								●	●	●	●	●	●
	SMD	RST	●	●	●	●	●	●					●	●	●	●	●	●
Pico Second Delay Lines	DIP	PICO DELAY	●					●					●	●	●	●	●	●
	SIP	S ₃ P	●					●					●	●	●	●	●	●
Pulse Transformers	SIP	SS	●					●					●	●	●	●	●	●
		Q ₁₀ R / Q ₂₀ R	●	●									●	●	●	●	●	●
		Q ₃₀ A			●								●	●	●	●	●	●
		P ₁₇ H	●	●	●								●	●	●	●	●	●

Delay Lines ディレイライン

RHT・RZT Type



Features

- TTL (74S04) Included.
- Total Delay: 20 ~ 250ns.
- DIP 5 outputs.
- Accurate control of leading and trailing edges. (RHT)

特長

- TTL(74S04相当)内蔵のバッファードディレイライン
- 全遅延時間20 ~ 250ns.
- DIP 5出力
- リーディングエッジ及びトレーリングエッジを高精度管理(RHT)

J₁₀ET Type

Features

- TTL (74S04) Included.
- Total Delay: 20 ~ 250ns.
- SIP 5 outputs.

特長

- TTL(74S04相当)内蔵のバッファードディレイライン
- 全遅延時間20 ~ 250ns.
- SIP 5出力

RMT Type



Features

- TTL (74S04) Included.
- Total Delay: 20 ~ 200ns.
- SMD 5 outputs.

特長

- TTL(74S04相当)内蔵のバッファードディレイライン
- 全遅延時間20 ~ 200ns.
- 面実装形 5出力

R₂₀ET Type

Features

- Total Delay: 2 ~ 300ns.
- 16-pin DIP 10 outputs.
- Exceptional Frequency Characteristics.

特長

- 全遅延時間2 ~ 300ns.
- DIP16ビン10出力
- 優れた周波特性

RET Type



Features

- Total Delay: 2 ~ 300ns.
- 14-pin DIP 10 outputs.
- Exceptional Pin-connection characteristics.

特長

- 全遅延時間2 ~ 300ns.
- DIP14ビン10出力
- 各種カスタム結線が可能

RST Type**Features**

- Total Delay: 10 ~ 200ns.
- SMD 5 outputs.
- Low profile (4mm Max.).

特長

- 全遅延時間10~200ns.
- 実装形5出力
- 低背形(4mm Max.)

RQT Type**Features**

- Total Delay: 10 ~ 300ns.
- 8-pin DIP 5 outputs.
- Low profile.

特長

- 全遅延時間10~300ns.
- DIP 8ビン5出力
- 低背形

J10D/JF Type**Features**

- Total Delay: 10 ~ 150ns. (JD)
50 ~ 400ns. (JF)
- Small size with fixed SIP configuration.

特長

- 全遅延時間 10~150ns.(JD)
50~400ns.(JF)
- 小形SIP固定形(中間タップ付きも可能)
- ハイインピーダンス対応可能(JF)

S3P Type**Features**

- Total Delay: 100ps ~ 2.5ns. (100ps Step).
- Thin with fixed SIP configuration.

特長

- 全遅延時間100ps~2.5ns. (100psステップ)
- 薄形SIP固定形
- 優れた周波数特性
- 高精度、高信頼性

SS Type**Features**

- Total Delay: 1 ~ 5ns. (1ns. Step).
- Small thin size with fixed SIP configuration.

特長

- 全遅延時間 1~5ns. (1ns.ステップ)
- 小形・薄形SIP固定形

Pulse Transformers パルストラ ns**Q10R/Q20R Type****Features**

- For Token-Ring LAN Equipment.
- Four windings are available for use.
- SMD Available (Q₂₀R)

特長

- トーケンリングLANの送受信回路に最適
- 4次巻線まで対応可能
- 面実装対応可 (Q₂₀R)

Q30A Type**Features**

- Features up to 4 circuits.

特長

- DIP16ビンパッケージに最大4個のパルストラ nsを内蔵

P17H Type**Features**

- Wide bandwidth characteristics.
- Transfer-molded for high reliability.

特長

- 広帯域特性
- トランシーバーモールドによる高信頼性

Pulse Modules パルスマジュール**PM02 Type****Features**

- IEEE 802.3 10BASE T based.
- Common Mode Choke included.
- Terminate Resistors for various Transistor IC available.
- Small, high reliability.

特長

- IEEE802.3 10BASE T 準拠
- コモンモードチョーク搭載
- 各種トランシーバICに適合した抵抗が内蔵可能。
- 小形、高信頼性



Manufactured by SPT (U.S.A.), member of TOKO Group SPT IC商品

Part Number	Description	Application
A/D Converter	HADC574Z 12-BIT A/D CONVERTER TTL, S/H, $25\mu\text{s}$ Conversion Speed	For use in following systems and equipment
	HADC674Z 12-BIT A/D CONVERTER TTL, S/H, $15\mu\text{s}$ Conversion Speed	
	SPT774 12-BIT A/D CONVERTER TTL, S/H, $8\mu\text{s}$ Conversion Speed	
	SPT7572 12-BIT A/D CONVERTER TTL, S/H, $5\mu\text{s}$ Conversion Speed	
	HADC77100 FLASH A/D CONVERTER 150MHz Sample Rate, 50MHz Bandwidth	
	HADC77200 FLASH A/D CONVERTER 150MHz Sample Rate, 75MHz Bandwidth	
	SPT7810 10-BIT A/D CONVERTER ECL, T/H, 20MHz Sample Rate	
D/A Converter	SPT7814 10-BIT A/D CONVERTER ECL, T/H, 40MHz Sample Rate	Factory Automation Data Processing Communications Security Measurements and Testing Medical Instrumentation
	HDAC7541Z BI-CMOS, 12-BIT MULTIPLYING D/A CONVERTER	
	HDAC7542A BI-CMOS, 12-BIT BUFFERED D/A CONVERTER	
	HDAC7543A BI-CMOS, 12-BIT SERIAL INPUT D/A CONVERTER	
	HDAC7545A BI-CMOS, 12-BIT BUFFERED D/A CONVERTER	
	HDAC10180 8-BIT, HIGH-SPEED D/A CONVERTER ECL 275MHz	
	HDAC10181 8-BIT, HIGH-SPEED D/A CONVERTER ECL 275MHz with Reference	
Comparator	HDAC51400 8-BIT, ULTRA HIGH-SPEED D/A CONVERTER ECL 400MHz	Measurements and Testing Medical Instrumentation
	HDAC52160 16-BIT, ULTRA HIGH-SPEED D/A CONVERTER Voltage Out 150ns	
	HCMP96850 SINGLE, HIGH-SPEED VOLTAGE COMPARATOR Differential Out	
	HCMP96870 DUAL, HIGH-SPEED VOLTAGE COMPARATOR Differential Out	
	SPT9689 DUAL, SUBNANOSECOND VOLTAGE COMPARATOR .65ns	
	HSCF24040 PROGRAMMABLE LOW-PASS FILTER	
Evaluation Board	EB100A HADC77100AIJ	
	EB100B HADC77100BIJ	
	EB101A HADC77200AIJ	
	EB101B HADC77200BIJ	
	EB102B BUFFER BOARD	
	EB103 HADC77200 PING-PONG BOARD	
	EB104 HADC574Z/674Z	
	EB105 HSCF24040	
	EB7810 SPT7810/7814	

System Product Applications システム商品 用途別一覧

Control Products 制御商品 (OEMも承ります。)

Type	Application	Numerical Control		Numerical Control Accessories
		• Machine Tools	• Robots	
NCB-102-2B/3B (Numerical Control Board)		●		
NCB203-1, 4 (Numerical Control Board)		●		
NCB-204-1, 2, 6 (Numerical Control Board)		●		
NCB-205-2, 6, 10 (Numerical Control Board)		●		
NCB30 Series (Numerical Control Board)		●		
SCB30 (Servo Control Board)				●

Video System Products 画像システム商品 (OEMも承ります。) ☺

Type	Application	Still Image Processing	Moving Image Processing	Color Video Monitoring	Video Accessories
		•	•	•	•
VT-300E/VT-500E (Image Processing Terminal)		●			
VT-300M (Moving Image Processing Terminal)			●		
MP-3000/MP-5000/MP-7000 (Moving Image Processing Terminal)			●		
TPM2000 (Color Video Inspection System)				●	
HDF-2000 (HDTV Frame Buffer Board)		●			
VIF-1000 (Digital VTR (D-1) Buffer)			●		
HM-7000, HDA-5000, TEN-6010N					●

Numerical Control Boards 数値制御用ボード

Description

In recent years, the automation and rationalization in factories has become a necessity. To aid the process, Toko has developed the NCB Series of numerical control boards for easier control of motors. Toko's NC boards consist of NC LSIs (KM3701AD, KM3702AD) as well as multi-functional software and microprocessors which control positioning, straight line and arc interpolation, etc. of machinery. When interfaced with a micro or personal computer, these board output motor control signals according to prescribed commands. Output signals are in pulse or analog voltage to control pulse motors and AC or DC servo motors. Different from most ready made NC devices, these boards can be adapted to fit your specific controller needs.

概要

近年、生産工場における自動化、省力化は必要不可欠なものとなっています。東光“NCBシリーズ”はこの様な背景の中で各種モータをより容易に制御する目的で開発しました。

数値制御用LSI (KM3701AD, KM3702AD)、多機能なソフトウェアおよびマイクロプロセッサなどを搭載、位置決め、直線補間、円弧補間などの機能を有しています。外部のマイクロコンピュータ、パソコンなどと接続し所定のコマンドを転送すると、モータ制御用信号を出力します。出力信号形式はパルス列およびアナログ電圧で、パルスモータ、ACおよびDCサーボモータに対応できます。即製のNC装置とは違って使用目的にフィットしたコントローラの構築が可能です。

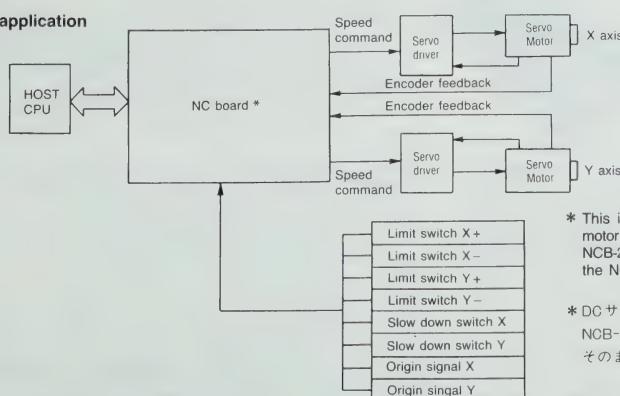
Applications

- Manufacturing equipment.
- Assembly robots.
- Processing robots.
- Arc welding and cutting equipment.
- Drafting equipment.
- Woodworking machinery.
- Adhesive application equipment.
- Painting machines
- Engraving machines
- Winding machines
- Specialized machinery.

用途

- 工作機械
- 組立ロボット
- 加工ロボット
- 溶接、溶断機械
- 製図機
- 木工機械
- 接着剤塗布機
- 塗装機械
- 彫刻機械
- 卷線機械
- 各種専用機械

Example of application



* This is an example when controlling a servo motor. For this purpose, the NCB-102, NCB-203, NCB-204 and NCB-205 can be used as such but the NCB30 must have an SCB30 attached.

* DCサーボモータをコントロールする例です。NCB-102, NCB-203, NCB-204およびNCB-205はそのまま、NCB30はSCB30を付加し、ご使用下さい。

Numerical Control Boards 数値制御ボード

NCB30 Series



NCB30X

NCB30V

NCB30P

NCB30N

Description

The NCB30 Series consists of highly efficient NC boards developed for simultaneous positioning control and interpolation control of two axes.

The NCB30 Series consists of four types of boards to match different bus constructions. For personal computers, there are the NCB30N for the NEC PC9801, the NCB30P for the IBM PC/AT and the NCB30X for the IBM PC/XT. For the VME bus I/O channel, there is the NCB30V.

The NCB30 Series of boards output pulses which are used as position/speed control signals. By using the optional SCB30 (Servo control board), analog voltage speed control signals can be output.

Features

Basic functions	: Positioning, linear and circular interpolation, origin return, step feed, jog feed.
No. of control axes	: Two simultaneously.
Feed speed	: Positioning:400KPPS, linear interpolation: 400KPPS circular interpolation: 200KPPS.
Max. command value:	$\pm 21^{31}$ ($\pm 2, 147, 483, 647$ pulses).

Type

Please use the designations listed below when placing your order.

Type	Function
NCB30N	For the PC9801 Series
NCB30V	For the VME I/O bus
NCB30P	For the IBM PC/AT
NCB30X	For the IBM PC/XT

概要

NCB30シリーズは、同時に2軸の位置決めおよび補間制御を行うことを目的として開発した高性能のNCボードです。接続するバス構造の違いによる4種類のボードが用意されており、位置・速度指令信号としてパルス列を出力します。オプションのSCB30(サーボコントロールボード)を付加することにより、アナログ電圧の速度指令を出力することができます。

特長

基本機能：位置決め、直線補間、円弧補間、原点復帰、ステップ送り、ジグ送り

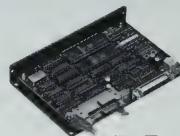
制御軸数：同時に2軸

送り速度：位置決め400KPPS、直線補間400KPPS、円弧補間200KPPS

最大指令値： $\pm 2^{31}$ ($\pm 2, 147, 483, 647$ パルス)

Servo Motor Control Board サーボモータコントロールボード

SCB30



Description

The SCB30 is a servo control board for two axes, which contains TOKO's KM3702D for positioning control and 12 bit D/A converters.

Features

- No. of axes: Two
- D/A Converter: 12-bit resolution
- Output Voltage: -10 to +10V; gain, adjustable ($\times 0.2$ to $\times 4.5$)
- Input Pulse Train Rate: 500Kpps Max.
- Encoder Input Rate: 500Kpps (With $\times 4$ selection)

概要

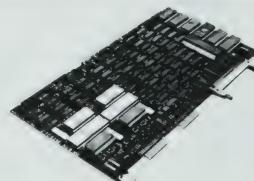
SCB30は、パルス入力信号を電圧出力信号に変換する2軸のサーボコントロールボードです。位置制御LSI KM3702ADと12ビットD/Aコンバータなどを搭載しています。

特長

- 軸数：2軸
- D/Aコンバータ：分解能12ビット
- 出力電圧：-10V～+10V、0.2～4.5倍の範囲でゲイン調整可能
- パルス入力レート：500Kpps最大
- エンコーダ入力：500Kpps最大(4倍速時)(アイソレーション付)

Numerical Control Boards 数値制御ボード

NCB-102-2B/3B



Description

The NCB-102 is a numerical control board consisting of a microprocessor and high performance software. Use is made of LSIs for function generation and positioning controls. The board generates signals for control of the servo position setting, interpolation of linear as well as the arc function, and for the stepping motor.

Features

Host CPU interface	: Multi-bus
Data send configuration	: ASCII code
Simultaneous control axes	: For positioning and straight line - 4 for arc - 2
Control output signal	: Pulse and analog voltage

Type

Type	Name	Explanation
NCB-102-2B	2 axes control board	Interfaces with host CPU
NCB-102-3B	Expansion board	With 2B+3B, control is increased to 4 axes

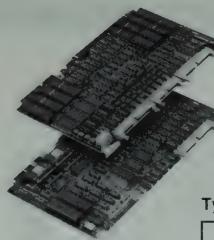
概要

NCB-102は、関数発生用LSIと位置制御用LSIを使用し、マイクロプロセッサと多機能なソフトウェアを搭載したインテリジェントなNCボードです。このボードはマルチバスを通して外部のホストCPUより転送される所定のコマンドにより、位置決め、直線・円弧補間を行いDCサーボおよびステッピングモータに移動出力します。

特長

ホストCPUインターフェース	マルチバス
転送データ形式	ASCIIコード
同時制御軸	位置決め、直線補間 4軸 円弧補間 2軸
制御出力信号	パルス列およびアナログ電圧

NCB203-1/4



Upper: 4-axis control boards
(NCB203-4)
Lower: Master board
(NCB203-1)

Type

Type	Name	Explanation
NCB203-1	Master board	Interfaces with host CPU
NCB203-4	4 axes control board	Combined with master board, control is increased to 8 axes

Description

Positioning, linear or circular interpolation are possible by the specific commands transmitted by the host CPU through the IEEE796 bus. A maximum of eight axes can be controlled with a combination of the master board and two 4-axis control boards.

Features

Host CPU interface	: Multi-bus
Data send configuration	: Binary code (4 bytes, dual port memory)
Simultaneous control axes:	For positioning, straight line interpolation 2 axes
Command gap	: $11\mu\text{s}$ (TYP.)
Control output signal	: Pulse and analog voltage

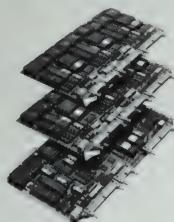
概要

NCB203はマルチバスを通して、外部のホストCPUから所定のコマンドを転送することにより、位置決め、直線・円弧補間を行い、ACサーボ、DCサーボ及びステッピングモータに移動指令信号を出力します。マスター ボード及び2枚の4軸制御ボードの組合せにより、最大8軸までの制御が可能です。

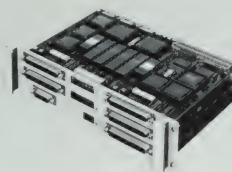
特長

ホストCPUインターフェース	マルチバス
転送データ形式	バイナリーコード(4バイトデュアルポートメモリを介す)
同時制御軸	位置決め、直線補間 8軸 円弧補間 2軸
コマンド間ギャップ	$11\mu\text{s}$ (Typical)
制御出力信号	パルス列およびアナログ電圧

NCB-204/NCB-205



NCB-204



NCB-205

Description

The NCB-204/205 are intelligent NC boards with microprocessor(s) and multi-function software installed. You can use the NCB-204/205 for positioning, liner interpolation and circular interpolation by sending commands from an external host CPU. Also, the 204/205 will output move command signals on the AC/DC servo motor and stepping motor by command from an external host CPU.

The NCB-204 supports the Multibus (IEEE-796 bus), and is capable of 2-axis liner/circular interpolation and independent positioning with up to 14 axes. The NCB-205, on the other hand, can be operated with the VME bus and has the functionality of 2-axis liner/circular interpolation and independent positioning with up to 10 axes.

Features

Independent control:	In the basic 2-axis mode, 204/205 can perform simultaneous interpolation control and independent control. With 3 axes and more, only independent control is possible.
Multiaxis:	The 204 can support up to 14 axes while the 205 is capable of using at most 10 axes.
High speed:	For positioning, 400 kpps. For liner interpolation, 400 kpps. For circular interpolation, 200 kpps.
Wide moving range:	When operating independently, up to $\pm 2^{31}$ ($\pm 2,147,483,647$) pulses are applicable as the maximum move command value.

■ NCB-204

Product Name	Description
NCB-204-1	Master board (2 axes)
NCB-204-2	Slave board (2 axes)
NCB-204-6	Slave board (6 axes)

■ NCB-205

Product Name	Description
NCB-205-2	2-axis unit (1 piece)
NCB-205-6	6-axis unit (2 piece)
NCB-205-10	10-axis unit (3 pieces)

概要

NCB-204/205は、マイクロプロセッサと多機能なソフトウェアを搭載したインテリジェントなNCボードです。外部のホストCPUから所定のコマンドを転送することにより、位置決め、直線・円弧補間を行い、AC DCサーボモータおよびステッピングモータに移動指令信号を出力します。

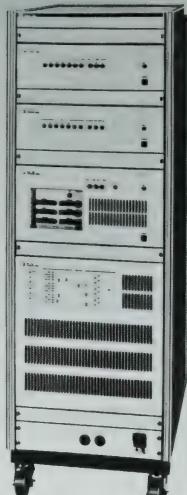
NCB-204はMultibus (IEEE-796 bus)に対応しており、2軸の直線・円弧補間、最大14軸の独立位置決め動作が可能です。また、NCB-205はVME busに対応しております、2軸の直線・円弧補間、最大10軸の独立位置決め動作が可能です。

特長

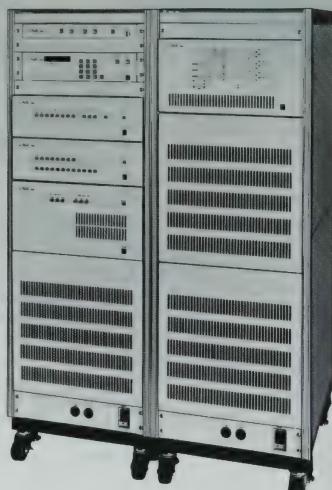
- 独立制御が可能…基本2軸は同時補間制御のみならず独立制御も可能、3軸以降は独立制御のみ可能
- 多軸対応…NCB-204で最大14軸、NCB-205で最大10軸の制御が可能
- 高速性…位置決め400kpps、直線補間400kpps、円弧補間200kpps
- 広い移動範囲…最大移動指令値として独立運転時 $\pm 2^{31}$ ($\pm 2,147,483,647$) パルスまで可能

Moving Image Processing Terminal 動画像入出力装置

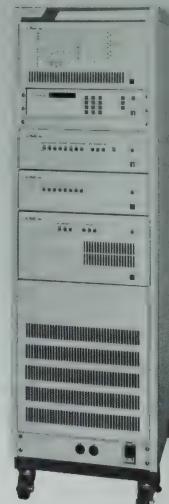
MP-3000/MP-5000/MP-7000



MP-3000



MP-5000



MP-7000

Description

The MP-series have been developed as a tool for improving the efficiency of computer simulation used in research for processing and understanding moving images and high efficiency image coding.

These system can be connected to various computers for the moving image simulation.

User friendly operating program (CLI=Command Language Interpreter), developed for moving image simulation, is available for remote control and image data transfer.

概要

各種テレビジョン信号の処理・理解及び高能率符号化などの研究を効率よく進めためのツールとして開発した動画像入出力装置で、各種コンピュータと接続し、動画像処理シミュレータが構成できます。

動画像処理シミュレータ用に開発した操作プログラム (CLI=COMMAND LANGUAGE INTERPRETER) を使用、コンピュータのターミナルを用いて会話形式にて柔軟に本装置のコントロール及び各種コマンドの実行ができます。操作プログラムは国際電信電話株の指導により開発しました。

Applications

Research for

- Digital Image Communication
- Digital VTR
- Digital TV
- Intelligent Robot
- 3-D Moving Image Processing
- Computer Animation
- Television System
- Signal Generator

応用

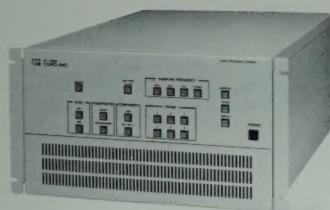
- 画像通信の研究
- デジタルVTRの研究
- デジタルTVの研究
- 視覚ロボットの研究
- 3次元動画像処理の研究
- コンピュータ・アニメーション
- テレビジョン方式の研究
- 動画像信号発生器

Specifications

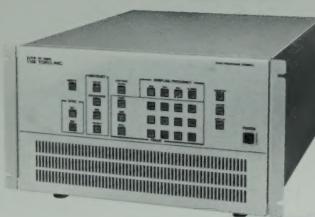
	MP-3000	MP-5000	MP-7000
IN/OUT Video Signal	NTSC 525/frame PAL, EDTV (option)	1125/60 (BTA S-001 Studio Spec.)	NTSC to HDTV
External Sync	Option	Tri-level bipolar Sync, or HD VD	C. Sync, HD VD, Tri-level bipolar Sync.
Sampling Frequency	14.32MHz (4 fsc) 2 fsc~4 fsc (option)	74.25MHz, 64.8MHz, 48.6MHz (Switchable)	80MHz (Max.)
Quantization	8 bits/pixel	8 bit per pixel	8 bit per pixel
Video Memory	192MB (12 seconds of moving image)	384MB (2.1 seconds of moving image)	384MB
Video Memory Expansion	1.92GB (NTSC signal 120 seconds of moving image)	1.92GB (10.5 seconds of moving image)	1.92GB
Operating Program (CLI)	System control functions and various command execution routines	System control functions and various command execution routine	System control functions and various command execution routine
Computer	VAX, SUN, Apollo, HP or Convex	VAX, SUN, Apollo, HP or Convex	VAX, SUN, Apollo, HP or Convex
Power Source	AC 100V, 4kVA	100V, 5kVA	100V, 5kVA
Dimension	540(W) x 1607(H) x 750(D)mm	540(W) x 1607(H) x 750(D)mm x 2	540(W) x 1800(H) x 750(D)mm

Image Processing Terminal 画像処理ターミナル

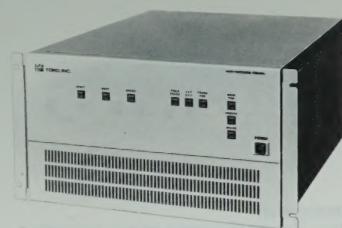
VT-300E/VT-300M/VT-500E



VT-300E



VT-300M



VT-500E

Description

These are image processing terminals for the picture storage of NTSC and Hi-Vision signal respectively. The VT-300M is applicable to moving image. Image data transfer between the host CPU and VT-300M is possible via the parallel interface (GP-IB, Standard). This makes the a very useful tool in image filing, computer graphics, broadcast and other applications.

Applications

- Image Processing. ● Computer Graphics. ● Frame Buffer.
- Standard Image ● Still Image Processing. ● Signal Generator.
- Filing.

概要

各種テレビジョン信号の静止画像シミュレーションに使用できる画像入出力装置です。

VT-300E/VT-300Mは静止画像、VT-300Mは動画像の取り扱いが可能です。

各種テレビジョン信号を、デジタル画像データとして記憶し、ホストコンピュータに転送します。

ホストコンピュータにより、加工処理された画像データをモニタテレビに出力し、アルゴリズムの評価を行うことができます。

VT-500EはNHK放送技術研究所のご指導により開発しました。

応用

- 画像処理 ● コンピュータ・グラフィックス ● 画像バッファ
- 標準画像ファイル ● 静止画像シミュレーション ● 信号発生器

Specifications

	VT-300E	VT-300M	VT-500E
IN/OUT Video Signal	NTSC, still picture	NTSC, moving picture	1125/60 (BTA S-001 Studio Spec.) still picture
External Sync	BBS	C. Sync, VBS	Tri-level bipolar Sync, or HD VD
Sampling Frequency	2 fsc, 3 fsc, 4 fsc, 13.5MHz	2 fsc, 3 fsc, 4 fsc, 13.5MHz	74.25MHz
Quantization	8 bit per pixel	8 bit per pixel	8 bit per pixel
Video Memory	NTSC Composite Video 3 frame, RGB composite 2 frame	48MB, 96MB (option)	1 frame of RGB (6MB)
Effective Picture Size	910(H) x 525(V)	910(H) x 525(V)	1920(H) x 1035(V)
Computer Interface	GP-IB	GP-IB, VME	GP-IB
Power Source	AC 100V, 0.4kHz	AC 100V, 1kVA	AC 100V, 1kVA
Dimension	480(W) x 249(H) x 578(D)mm	480(W) x 249(H) x 578(D)mm	480(W) x 249(H) x 578(D)mm

Color Video Inspection System カラー印刷物監視システム TPM2000

TPM2000



System structure:
—CCD Camera, TV Monitor,
Controller, Stroboscope
and traverse mechanism.

Description

The TPM2000 is a video inspection system for the printing press. All WEB area which run at high speed can be monitored as the still picture on TV Monitor.

概要

高速で走行中の印刷物をストロボとCCDカラーカメラでとらえ、リアルタイムでモニタテレビに表示します。

カメラスライド機構により、ウェッブ横方向、エンコーダにより版面方向と全ウェッブの監視が可能です。

印刷物のオンライン品質管理に最適です。

Video Accessories 画像アクセサリ

HM-7000
HI-VISION MATRIX TRANSLATOR

Description

This high performance matrix translator makes conversions between YPbPr and GBR high-vision video GBR signals. Two way conversions are done using the internal GBR → YPbPr and YPbPr → GBR circuitry. The ON/OFF function of the Matrix conversion and synchronizing signal equipped can be controlled either by switches on the front panel or by remote methods.

概要

ハイビジョン方式の映像信号であるGBRとYPbPr間の変換を行う高性能なマトリックス変換器です。

GBR→YPbPr及びYPbPr→GBRの各回路を内蔵しており、相互変換が可能です。マトリックス変換及び同期信号付加のON/OFFがフロントパネルのスイッチ又はリモートによりコントロールできます。

HDA-5000
HDTV VIDEO DISTRIBUTION AMPLIFIER

Description

This high performance video distribution amplifier can be used for a wide range of image signals including HDTV, PAL, SECAM, and NTSC. With steady frequency characteristics up to approximately 50MHz, it can be adapted for use as studio equipment. Up to 3 inputs (3CH x 1) and 9 outputs (3CH x 3) can be used at one time.

概要

HDTV、PAL、SECAM及びNTSC等の広範囲な映像信号に使用できる高性能ビデオ分配器です。50MHz程度まで平坦な周波数特性を持っており、スタジオ機器等への応用が可能です。

3入力(3CH×1)、9出力(3CH×3)まで利用できます。

TEN-6010N
NTSC COLOR ENCODER

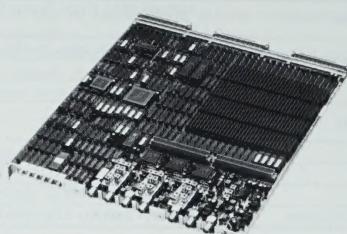
Description

This color encoder converts the NTSC mode Y,R-Y,B-Y primary color signals into a composite video signal. The input synchronizing signal can be used either combined with component signal or an external synchronizing signal. 2-composite video signal outputs have also been provided.

概要

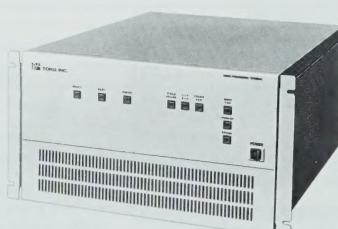
NTSC 方式のY・R-Y・B-Yの原色信号を複合映像信号に変換するカラーエンコーダです。入力同期信号は輝度信号に複合されたもの、あるいは外部同期信号が使用できます。2 系統の複合映像信号出力が用意されています。

HDTV Frame Buffer Board HDTVフレームバッファボード



HDF-2000

Digital VTR (D-1) Buffer デジタルVTR(D-1)バッファ



VIF-1000

Description

The HDTV Frame Buffer Board is a triple-height VME bus board. A 16MB video memory is mounted on the board. It is capable of storing 2 HDTV color screens and 2 overlay displays. Installed with Sun workstations, the HDTV Frame Buffer Board provides high-definition images in full colors.

概要

HDTVフレームバッファボードは、トリプルハイライトサイズのVME busボードです。オンボードに16MBのビデオメモリを搭載し、ハイビジョンRGBカラー画像及びオーバーレイの画像をそれぞれ2画面記憶することができます。SUNワークステーションに実装し、ハイビジョン映像をフルカラーで表示します。

Description

The VIF-1000 is an interface which connects a digital VTR (D-1 Standard) to the host computer. The VIF-1000 can store image data of one second in its standard 48MB video memory. It also has an image output terminal and is capable of monitoring image data. Since it is capable of remote controlling digital VTRs under control from the host computer, you can readily do editing, recording and replaying on-line.

概要

VIF-1000は、デジタルVTR(D-1規格)をホストコンピュータに接続するためのインターフェース装置です。ビデオメモリとして48MBを標準装備しており、約1秒の画像データを蓄積することができます。映像出力端子も用意されており、画像データのモニタが可能です。ホストコンピュータの指令で、デジタルVTRをリモート制御しますので、編集・録画・再生などが、オンラインで自由に行えます。

rock



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